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4Motion® BTS and Mini-Centralized ASN-GW Device Driver for AlvariSTAR

User Manual

Software Version: 3.0.10
February 2011
P/N 215817

Document History

Topic	Description	Date Issued
Version Number and date Cover page, About this Manual	Updated versions numbers	November 2008
Managing a BTS Site Chapter 2	Updated to reflect Device Driver version 2.5.1.19 and managed device's NPU SW version 2_5_1_8.	November 2008
Parameters Summary Chapter 4	Updated to reflect Device Driver version 2.5.1.19 and managed device's NPU SW version 2_5_1_8.	November 2008
Manual's Name	"Device Manager" replaced by "Device Driver"	December 2008
Using the Device Manager Chapter	Chapter was removed. Its contents now form the first section in "Managing a BTS Site".	December 2008
Enabling Discovery	New Chapter	December 2008
The Equipment Manager	New Chapter	December 2008
Tasks Chapter	Completely revised (Overview section removed - updated version exists in the Infrastructure Manual. All Task sections updated and modified).	December 2008
The File Manager	New Chapter	December 2008
Offline Configuration Manager	New Chapter	December 2008
The Performance Viewer	Updated	December 2008r
Managing a BTS Site and Parameters Summary Chapters	Updated to reflect 2.5 beta versions of NPU and Device Driver	December 2008
AlvariCRAFT	Added AlvariCRAFT to the shared platform.	March 2009
The Equipment Manager	Updated to reflect all GUI changes of Management System Infrastructure Version 4.5. New feature: Open Alarms. Updated functionality of Multiple Configuration and Backup Configuration options.	August 2009
Site Equipment View Page	Added support for Outdoor BTS. General updates/improvements.	August 2009

Topic	Description	Date Issued
Site Page, General Tab	Removed: Shelf HW Version parameter. Updated range for Site Address. Updated ranges for Longitude and Latitude. Updated description of Product Type. Updated Site Number change process. Added warning-a change in ASN Topology will take effect after next reset.	August 2009
Site Page, Dry Contacts Tab	New feature: Send Alarm condition for Input Alarms. Applicable only for Indoor BTS.	August 2009
Site Page, Time Tab	Removed: Clock Source parameters	August 2009
L1/L2 Connectivity Page	Removed: External Management VLAN ID. Added: AU Maintenance VLAN ID. Ethernet port are configurable also if Admin Status is enabled (Up). Added warning-a change in Connectivity Mode will take effect after next reset. CSCD port is applicable only for Indoor BTS. Updated description of VLAN Assigned	August 2009
IP Interface Page	No need to shut down the interface for modifying IP Interface parameters. Added warning-reset required after changing Bearer Interface IP Address.	August 2009
ACL Page	Updated with details on automatically created ACLs.	August 2009
Management Page, Performance Tab	Collection of Counters Groups that are not fully supported by the device cannot be enabled. Removed Performance Collection Interval.	August 2009
Management Page, Logging Tab	Updated description of Server IP.	August 2009
NPU Page	Added Reset To Factory With Connectivity option.	August 2009
Power Supply Page	Updated options for PIU HW Version (58Amp/35Amp). Applicable only for Indoor BTS.	August 2009

Topic	Description	Date Issued
New AU Window (Creating a New AU)	Updated options for AU Type (only AU 4x4 Modem is applicable). Removed Ports and Bandwidth parameters.	August 2009
AL Slot # Page, Card Properties Tab	Updated Required and Installed sections: ■ Updated options for AU Type (only AU 4x4 Modem is applicable). ■ Removed Ports and Bandwidth parameters. Added Maintenance Connectivity parameters.	August 2009
New ODU window	ODU number is 1-28 for Indoor BTS and 1-24 for Outdoor BTS.	August 2009
ODU # Page	Removed: Heater Existence. Removed: Enable Tx.	August 2009
GPS Page	Removed: GPS Adapter Required	August 2009
Power Feeder Page	Applicable only for Indoor BTS.	August 2009
Antenna Page	Changed to reflect the use of the new Antenna Product Type parameter. Added Information read-only field, updated description of Description and Number of Ports. Updated ranges for Longitude and Latitude. Up to a maximum of 24 antennas can be defined for an Outdoor BTS.	August 2009
AAA Page	Updated structure. Accounting/Authentication UDP Port parameters removed. AAA Name added.	August 2009
Qos Marking Page	Updated range for QoS Marking Rule Name and Service Flow Media Flow Type. Marking Rule Name must be unique in the device. Added description of functionality of the feature.	August 2009

Topic	Description	Date Issued
Service Group Page, Service Interface Tab	Changed “Tunnel MTU Size” to “MTU Size”. Updated description of Default Gateway IP Address. Added Subnet Mask. Updated value range for Service Interface Name (1-30 characters). Added general description of service interfaces. Updated description of Tunnel Destination IP.	August 2009
Service Group Page, Service Groups Tab	Changed “Client Class Identifier” to “Vendor Class Identifier”. Added “Secondary DNS Server”. Added Service group deletion rule related to VLAN Service Interface. Updated value range for Service Group Name (1-30 characters). Added VPWS-Mapped option to Service Group Type. Updated value range for Lease Time. Added rule for DHCP Server IP Address Pool configuration. Add rule for Renewal Time configuration. Added general description of service groups. Updated description of Subnet Mask and Default Gateway IP Address.	August 2009
SFA Page, PHS Rule Tab	Updated range for PHS Rule Name	August 2009
SFA Page, Classification Rule Tab	Updated range for Classification Rule Name. Added configuration rules for Layer 3 and Layer 4 classifiers.	August 2009

Topic	Description	Date Issued
Service Profile Page	Removed Uplink/Downlink SDU Size. Updated range for Service Profile Name. Unsolicited Grant Interval (uplink) is not applicable for RTVR. Traffic Priority not applicable for UGS. Updated range for Max. Sustained Traffic Rate, Min. Reserved Traffic Rate. Added general description of service profiles and service flows. Updated description of Reference Service Interface.	August 2009
ASN-GW Keep Alive Page	New Feature	August 2009
BS Node	Added a note regarding the need to reset the AU and/or update neighbors after modifying certain parameters.	August 2009
Create BS	Updated process (no need to click Apply on Radio Advanced and Connectivity pages after completing configuration of mandatory parameters.	August 2009
Copy BS	New feature	August 2009
Radio Basic Page, General Tab	Added Idle Mode parameters. Updated range for Center Frequency.	August 2009
Radio Basic Page, Air Fame Structure General Tab	Removed Enable Uplink Sub-Channel Rotation.	August 2009

Topic	Description	Date Issued
Radio Basic Page, Air Frame Structure Zones Tab	Removed Map Size, added new First Zone parameters (Minimum Size, Maximum Size, Maximum Map Size). Added Uplink Data Zone Basic Rate. Added Downlink Data Zone Basic Rate for Management. Downlink Data Zone Number of Sub-Channels, Uplink Feedback Zone Number of Sub-Channels, Uplink Data Zone Number of Sub-Channels, Uplink Data Zone Start Allocation were removed. Removed Dynamic Permutation parameters (moved to Radio Advanced Page, Diversity Tab.	August 2009
Radio Basic Page, Diversity Tab	Moved to Radio Advanced Page.	August 2009
Radio Basic Page, Mobility Tab	New Tab name (was Handover tab). Added Neighbor column to Triggers table. Updated parameters in Neighbor List table. Updated button name (Choose Neighbor changed to Add Entry). Add details on Neighboring Task.	August 2009
Radio Advanced Page, Feedback Tab	Updated value range for Start of Ranging Codes. Removed consistency rule. Updated value range for IR CDMA Allocation Period. Removed Contention-Based Reservation Timeout, Number of Codes, Initial Backoff Window Size, Final Backoff Window Size, PR CDMA Allocation Period, Enable polling upon zero bandwidth request, all Timing Corrections parameters, Maximum CQI Region Size	August 2009
Radio Advanced Page, Diversity Tab	New. Moved from Radio Basic Page, with following changes: Downlink Data MIMO Mode is read-only. Removed all other parameters excluding Downlink Permutation Base and Uplink Permutation Base.	August 2009

Topic	Description	Date Issued
Radio Advanced Page, Channel Descriptors Tab	Removed	August 2009
Radio Advanced Page, Power Control Tab	Tab name changed (was Power Control Levels). Added Power Control Correction Factor. Removed Feedback Zone and Maximum EIRxP. Updated range for PUSC Zone.	August 2009
Radio Advanced Page, Power Control Policy Tab	Removed	August 2009
Radio Advanced Page, Rate Adaptation Tab	Removed (Basic Rate parameters moved to Services Page, Definitions Tab)	August 2009
Radio Advanced Page, Mobility Tab	New Name (was Handover). Removed all SBS and Handover Control parameters. Changed the name of RSSI parameter in Trigger Setup parameters to Averaging Duration (with updated description), removed all other Trigger Setup parameters. Changed Neighbor Advertisement to Neighbor Advertisement Broadcast. Changed the name of Periodic Interval to Interval. Removed all other Neighbor Advertisement parameters.	August 2009
Radio Advanced Page, Scanning Tab	Removed	August 2009
Radio Advanced Page, Management Tab	Removed general Downlink Dropped Packets Ratio parameter. Added new parameters for Alarm Threshold for Downlink Dropped Packet Ratio per service type. Added new parameters for Alarm Thresholds for noise and interference level.	August 2009
Radio Advanced Page, QoS Tab	New feature	August 2009
Connectivity Basic Page, Bearer Tab	Added VLAN ID (read-only). Updated descriptions of IP Address and Default Gateway.	August 2009

Topic	Description	Date Issued
Connectivity Advanced Page, QoS Marking Rules Tab	New Name (was Bearer Plane) Updated range for Service Flow Data Delivery Type	August 2009
Connectivity Advanced Page, Keep Alive Tab	New feature	August 2009
Connectivity Advanced Page, ID-IP Mapping Tab	Moved from Connectivity Basic Page to Connectivity Advanced Page	August 2009
Services Page, Definition Tab	Changed the name (was previously Service Definition). Changed the structure. Added parameters related to Idle Mode. Added Basic Rate parameters (moved from previous Radio Advanced Page, Rate Adaptation Tab). Removed Max Sub-Burst Size and Target Packet Error Rate.	August 2009
Services Page, Mapping Tab	Removed SDU Size. Updated limitation in Service Name. Updated supported options for R1 Profile Data Delivery/Scheduling Type. Updated limitations for R1 Profile Priority, Min. Reserved Traffic Rate, Max. Sustained Traffic Rate, Latency. Updated range for R6 Profile parameters: Min. Reserved Traffic Rate, Max. Sustained Traffic Rate. Updated range for Map to R1 Profile parameters: Min. Reserved Traffic Rate, Max. Sustained Traffic Rate.	August 2009
Duplicate Site Manager	New name (was previously Offline Configuration Manager)	August 2009
Duplicate Site Manager, Twin-Site Creation wizard, Step 2	Modified structure. Updated range for Site Address. Added IP Routing section. Added comments on applicability of Connectivity parameters.	August 2009

Topic	Description	Date Issued
Duplicate Site Manager, Twin-Site Creation wizard, Step 3	Added Service Interfaces section.	August 2009
Duplicate Site Manager, Twin-Site Creation wizard, Step 4	Updated names of some parameters. Removed Number Of Sub-Channels (UL Data Zone). Added Paging Group ID. Updated range for Center Frequency.	August 2009
Duplicate Site Manager, Twin-Site Creation wizard, Step 5	Removed: Altitude, Electrical Azimuth Adjustment Antenna Heading is not mandatory.	August 2009
File Manager	Updated to reflect all GUI changes of Management System Infrastructure Version 4.5. Added in Equipment File Manager: SW Version, Status. In Duplicate Site File Manager: Added NE, updated descriptions of Site IP and Site ID.	August 2009
Tasks	Updated to reflect all GUI changes of Management System Infrastructure Version 4.5. Updated to reflect the new Task Wizard. Added CLI Task. Added Neighboring Task. Added Multiple Configuration Task	August 2009
Template Manager	New feature	August 2009
Parameters Summary	Updated to reflect all changes of release 2.5.2 including updated ranges/defaults.	August 2009
Supported equipment	Updated manual to reflect support for Mini-Centralized ASN-GW	October 2009
Enabling Discover	Updated sections on VLAN Translation, External Management Interface and Static Route Definition.	October 2009
AAA Page	Added VLAN Classifier Bit Alignment	November 2009
Service Group Page-Service Groups Tab, Template Manager	Added new options to Agent Circuit ID and Agent Remote ID. Corrected Sub-options numbers.	November 2009

Topic	Description	Date Issued
Enabling Discovery	Added support of SNMP v2c	March 2010
Using the Equipment Manager	Revised	March 2010
Managing a Single Device	Completely revised and updated to reflect the following: New structure, new products, new features, new/removed/modified parameters, improved descriptions.	March 2010
Template Manager	Completely revised and updated to reflect updated concept, new features, new/removed/modified parameters, improved descriptions.	March 2010
Task Manager-Multiple Configuration Task	Can be opened also from the Template Manager. New-Preview Only option	March 2010
Duplicate Site Manager	Updated to reflect support for all Macro BTS devices (Indoor/Outdoor) and Mini Centralized ASN-GW. Updated order of screens in the process of new site creation.	June 2010
Managing a Single Device, Service Group Page, Service Flow Parameters Editor Template Manager, The ASN-GW Template - Service Profile Page - Service Flow Tab	Updated range for Media Flow Type (up to 15)	SW Version 3.0.10 December 2010
Managing a Single Device, AU Slot Page - Control Tab	Updated options for Shutdown Power (AU to ODU/Radio): Added Rx Only option.	SW Version 3.0.10 December 2010
Managing a Single Device, R6/R8 Bearer Interface Page - Bearer Tab Template Manager, The BS Template -R6/R8 Bearer Interface Page - ASNGW Pools Tab	Updated configuration rule for enabling the Secondary Pool (Pool2)	SW Version 3.0.10 December 2010
Managing a Single Device, Radio Basic Page-Air Frame Structure Zones Tab Template Manager, The BS Template -General Def Tab	New parameter: Maximum Sub Burst Mode	SW Version 3.0.10 January 2011
The Performance Monitoring Viewer	Updated to reflect modified functionality	SW Version 3.0.10 January 2011

Topic	Description	Date Issued
Software Upgrade Task	Improved description.	SW Version 3.0.10 January 2011
Tasks - 4Motion Mutual Neighboring	New task (infrastructure 4.8)	SW Version 3.0.10 January 2011
Offline Configuration Tool	New feature	SW Version 3.0.10 January 2011
Managing a Single Device, Creating/Copying/Deleting a BS Managing a Single Device, Radio Basic Page - General Tab Template Manager, The BS Template -Radio Basic Page - RF Tab Duplicate Site Manager-Twin Site Creation-Step 3	Updated value range for Center Frequency	SW Version 3.0.10 January 2011
Managing a Single Device, Radio Basic Page - Air Frame Structure Zones Tab	DL Diversity Mode: Beam Forming is a licensed feature - password is required.	SW Version 3.0.10 January 2011

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About This Manual

This manual describes how to use AlvariSTAR and AlvariCRAFT Device Driver Version 3.1 for managing 4Motion BTS and Mini-Centralized ASN-GW equipment running SW Versions 3.0.10 (NPU and AU) using NMS Infrastructure Version 4.8.

This manual is intended for personnel responsible for managing the equipment system using the AlvariSTAR Element Management System and/or the AlvariCRAFT Local CRAFT Utility. It is assumed that the reader is familiar with the operation and use of AlvariSTAR, AlvariCRAFT, and with the operation and administration of 4Motion BTS system components and/or the Mini-Centralized ASN-GW. For more information refer to the AlvariSTAR and AlvariCRAFT User Manual and to the relevant equipment System Manuals.

In this manual, Network Management System refers to AlvariSTAR, and Local CRAFT Utility refers to AlvariCRAFT. Unless otherwise stated, all features are applicable to both AlvariSTAR and AlvariCRAFT. Limitations on AlvariCRAFT due to the single device restriction are noted in a Note specific to the application, as follows:

LOCAL CRAFT NOTE

This feature is not applicable to the Local CRAFT Utility.

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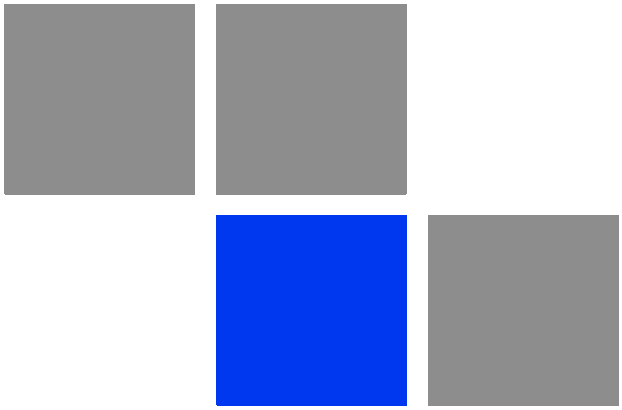


Chapter 1

Enabling Discovery

For general details on discovering devices, refer to the relevant sections in the Management System Manual. The SNMP agent in the devices supports SNMP v2c.

To allow remote management of the site and to enable discovery by the management system, some basic parameters must be configured locally using CLI via the MON port of the equipment.

Refer to the equipment System Manual for information on how to access the CLI either via the MON port or via Telnet and how to use it.

The following configuration steps describe the minimum mandatory configuration actions required:

1 **Clear Previous Configuration:**

Clear existing site configuration (must be executed for "used" NPUs): Restore to factory default and reboot using the following command:

npu# restore-factory-default

2 **Connectivity Mode:**

The connectivity mode determines how traffic is to be routed between the NPU and the BSs, AAA server and external Management System servers.

The default connectivity mode is In-Band (IB) via the Data port. Alternatively, the NPU can be managed Out-Of-Band (OOB) via the dedicated Management port. In Unified mode the bearer IP domain and external management IP domain (via the Data port) are unified.

To view the current and configured connectivity mode, use the command:
npu# show connectivity mode

To change the connectivity mode to Out-Of-Band, use the command:
npu(config)# connectivity mode outband.

3 **VLANs Translation (In-Band Connectivity Mode):**

The Data port operates in VLAN-aware bridging mode (tagged-trunk mode). The values configured for VLAN ID(s) used on this port are the VLAN IDs used internally. These are the VLAN ID for the bearer IP interface (the default is 11) and, in In-Band Connectivity mode, the VLAN ID of the external-management IP interface (the default is 12).

When using In-Band connectivity via the Data port, if the value of the VLAN ID used for management in the backbone differs from the value configured for the external-management interface, the external-management VLAN ID should be translated accordingly. It is recommended to configure also VLAN translation for the bearer interface.

To enable VLAN translation and configure the required VLANs translation, run the following commands (the examples are for backhaul Data VLAN ID 30 and Management VLAN ID 31, assuming the default VLAN IDs for external-management and bearer interfaces):

a Enable the Data port configuration mode:
npu(config)# interface gigabitethernet 0/10

b Enable VLAN translation: *npu(config-if)# vlan mapping enable*

c Translate data VLAN 11 to the backhaul data VLAN 30:
npu(config-if)# vlan mapping 11 30

d Translate management VLAN 12 to the backhaul management VLAN 31:
npu(config-if)# vlan mapping 12 31

e Exit the interface configuration mode: npu(config-if) exit

f To view the VLAN mapping parameters, run the command:
npu# show interface gigabitethernet 0/10 vlan mapping

4 **External Management Interface:**

To configure the necessary parameters of the External Management interface used for connectivity with the EMS system and Local CRAFT Utility, run the following commands:

a Enable the External Management interface configuration mode:
npu(config)# interface external-mgmt

b Configure the IP address (x.x.x.x) and subnet mask (y.y.y.y):
npu(config-if)# ip address x.x.x.x y.y.y.y

c Exit the interface configuration mode: *npu(config-if) exit*

5 **Apply Changes in Site Connectivity Configuration:**

The system must be reset to apply the changes: *npu# reset*

6 **Static Route Definition:**

Static Route must be configured whenever the EMS server and the NPU are on different subnets.

Run the following command: *npu(config)# "ip route x.x.x.x y.y.y.y z.z.z.z*" (x.x.x.x y.y.y.y is the network segment of the EMS server, z.z.z.z is the next-hop IP address that should be in the segment of the external-management interface.

7 SNMP and Trap Managers Definition"

To define the communities to be used by the SNMP manager, run the command:
npu(config)# snmp-mgr ReadCommunity public ReadWriteCommunity private

For proper operation of the manager you should configure also the Trap Manager parameters and enable sending traps to the defined Trap Manager:

a *npu(config)# trap-mgr ip-source x.x.x.x port 162 TrapCommunity public* (x.x.x.x is the IP address of the EMS server).

b npu(config)# trap-mgr enable ip-source x.x.x.x

Note that if the management system is behind a NAT router, the NAT Outside IP address (the IP of the router's interface connected in the direction of the managed device LAN) must be defined in the device as a Trap Manager, with traps sending enabled. In the NAT router, Port Forwarding (NAT Traversal) must be configured for UDP and TCP ports 161 and 162 from Outside IP (connected to the managed device's LAN) to Inside IP (connected to the management system's LAN).

8 Site ID Definition:

To define the site ID (BTS Number): *npu(config)# site identifier x*
(x is the unique site identifier, a number in the range from 1 to 999999)

9 Save and Apply

To save the configuration run the command: npu# write (otherwise, after the next time reset you will lose the configuration changes).

To apply the new configuration run the command npu# reset.

Chapter 2

Using the Equipment Manager

For general details on using the Equipment Manager, refer to the relevant section in the Management System Manual that covers all details and features common to all product types.

This Chapter covers some features of the Equipment Manager for the specific product type that may not be applicable for all product types:

1. When selecting the applicable device family in the View option, the display includes for each BTS the BTS Number. This is the BTS Number parameter configured in the device. Applicable only for devices with Operational State of Enabled or devices that were reached previously. For details on the BTS Number parameter refer to "Site General Tab" on page 140 (Properties section).
2. The available management options (right-click) includes the following options that may not be available for other product types:

Option	Description
Performance	Opens the Performance Monitoring Viewer for the selected device. Not available if two or more devices are selected or if the Operational State of the selected device is other than Enabled. For more details refer to "The Performance Monitoring Viewer" on page 283.
Multiple Configuration	Opens the template-based Multiple Configuration Task, allowing simultaneous configuration of several devices. The selected devices are automatically included in the Equipment tab of the Multiple Config task. Refer to "Multiple Configuration (Template Based) Task" on page 316.
Backup Configuration	Opens a Configuration Backup Task for the selected device(s). Available only if the Operational State of all selected devices is Enabled. Refer to "Backup Configuration Task" on page 297.

Chapter 3

The Network Maintenance Manager

In This Chapter:

- "The Network Maintenance Manager" on page 9
- "Retrieval of MS Data" on page 10
- "Retrieval of All MSs Data" on page 12
- "Single MS De-Registration" on page 15
- "All MSs De-Registration" on page 16

3.1 The Network Maintenance Manager

The Network Maintenance Manager supports MS-Level operations related to the display of the momentary values of a predefined set of parameters of a specific Mobile Subscriber (MS). These parameter values can to be evaluated during operator-initiated troubleshooting. In addition, this feature enables forced de-registration of one or multiple MSs from the network.

In the current release MS-level operations supported by the management system are targeted towards the ASN-GW.

To open the Network Maintenance Manager

1. Select *Managed Network* > *Network Maintenance* from the Navigation Pane or menu bar. The Network Maintenance Manager window opens.
2. In the Operation drop-down menu, select the required operation. The available options are:
   - “Retrieval of MS Data” on page 10
   - “Retrieval of All MSs Data” on page 12
   - “Single MS De-Registration” on page 15
   - “All MSs De-Registration” on page 16

3.2 Retrieval of MS Data

The Retrieval of MS Data option is used to retrieve data related to a specific MS, as maintained by the ASN-GW that currently serves the MS.

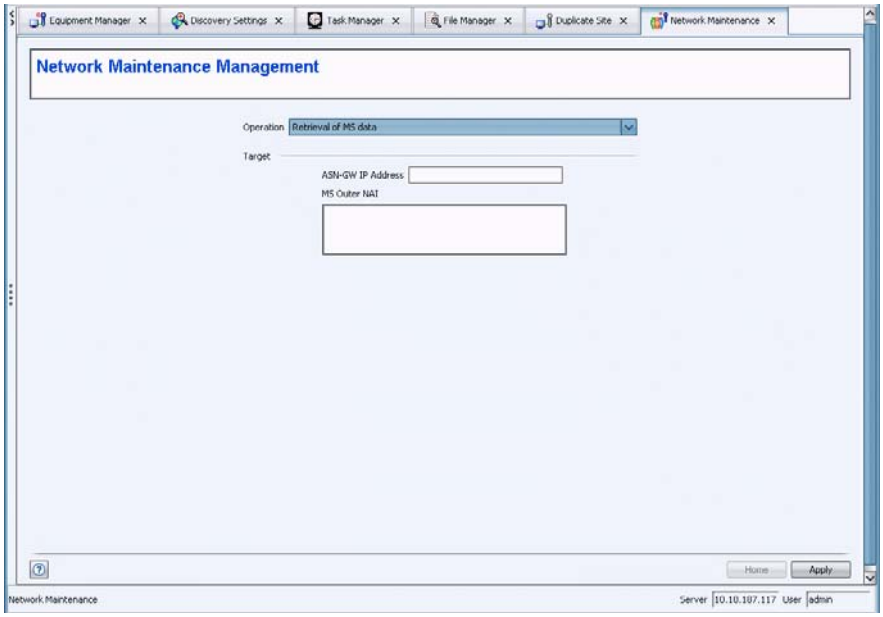


Figure 3-1: Network Maintenance - Retrieval of MS Data

To retrieve data related to a specific MS, enter the ASN-GW IP Address of the ASN-GW currently serving the MS (Bearer IP address), and the MS Outer NAI (the complete NAI, a string of up to 253 characters, such as {am=1}4efd450727234884ad6bf3db0d68c077@company.com). The settings of the MS identification data depends on getting this data from the AAA server.

Click **Apply** to retrieve the data for the specified MS.

The displayed details include:

Parameter	Description
Target	
ASN-GW IP Address	The IP address of the target device (Bearer interface IP address).
ASN-GW BTS Number	The BTS Number (Site ID) of the target device.
MS Outer NAI	The Outer NAI string of the selected MS.
MS Data	

Parameter	Description
MS ID (MAC Address)	the MS ID (MAC address)
Serving BS ID	The full ID of the serving BS.
Serving BS BTS Number	The BTS Number (Site ID) of the serving device.
Associated Service Flows (per flow assigned to the MS)	
SF-ID	The Service Flow ID.
Mapped GRE Key	The GRE Key mapped to the Service Flow.
Direction	The direction of the Service Flow (Up or Down).
Assigned IP Address	The assigned IP address.

The following buttons are now available:

Button	Description
Refresh	Click to refresh the displayed data.
Home	Click to return to the main Network Maintenance Management window.
De-Register MS	Click to force de-registration of the MS.

3.3 Retrieval of All MSs Data

The Retrieval of All MSs Data option is used to retrieve general details related to all MSs served by a specific ASN-GW, as maintained by the ASN-GW.

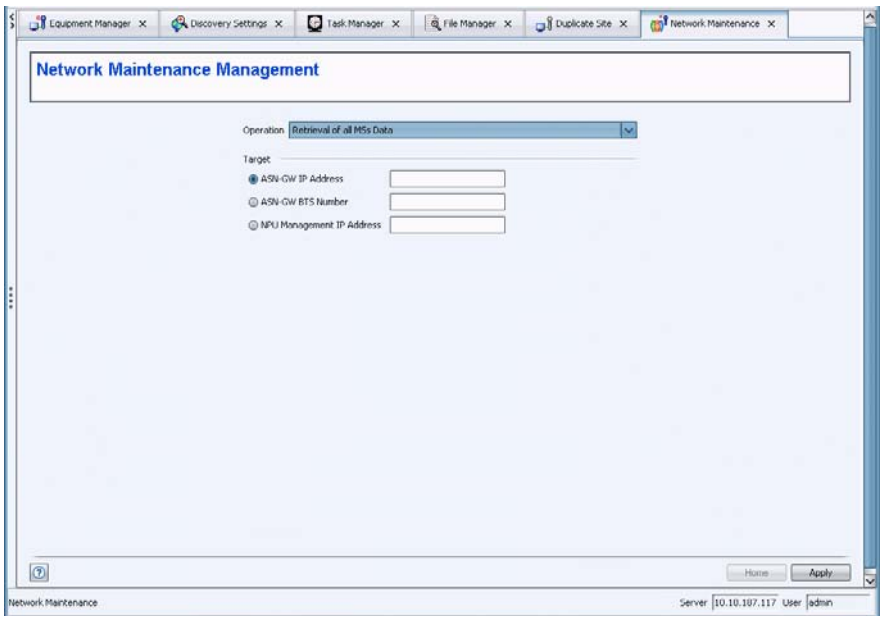


Figure 3-2: Network Maintenance - Retrieval of All MSs Data

You can select the serving entity by:

- ASN-GW IP Address (the Bearer interface IP address of the target device).
- ASN-GW BTS Number (the BTS Number of the target device).
- NPU Management IP Address (the IP address of the interface used for managing the site (NPU) to which the ASN-GW is assigned).

Select the option you want to use and enter the applicable value in the field next to the selected option.

Click **Apply** to retrieve the data for all MSs served by the specified ASN-GW.

The displayed data for all MSs served by the specified entity includes:

Parameter	Description
Target	
ASN-GW IP Address	The IP address of the target device (Bearer interface IP address).
ASN-GW BTS Number	The BTS Number (Site ID) of the target device.
MS Data (per MS served by the target device)	
MS ID	the MS ID (MAC address)
Serving BS ID	The full ID of the serving BS.

The following buttons are now available:

Button	Description
Refresh	Click to refresh the displayed data.
Home	Click to return to the main Network Maintenance Management window.
Export List to CSV	Click to open the Select Export Destination File, allowing you to export the All MSs Data to a CSV file in a selectable location.
De-Register All MSs	Click to force de-registration of all MSs served by the selected device.
Retrieve Selected MS Full Data	Select an entry in the MS Data table and click to retrieve from the ASN-GW full details for the selected MS. See below the displayed details.

The displayed full details for the selected MS include:

Parameter	Description
Target	
ASN-GW IP Address	The IP address of the target device (Bearer interface IP address).
ASN-GW BTS Number	The BTS Number (Site ID) of the target device.
MS Outer NAI	The Outer NAI string of the selected MS.
MS Data	
MS ID (MAC Address)	the MS ID (MAC address)
Serving BS ID	The full ID of the serving BS.
Serving BS BTS Number	The BTS Number (Site ID) of the serving device.
Associated Service Flows (per flow assigned to the MS)	
SF-ID	The Service Flow ID.
Mapped GRE Key	The GRE Key mapped to the Service Flow.

Parameter	Description
Direction	The direction of the Service Flow (Up or Down).
Assigned IP Address	The assigned IP address.

The following buttons are now available (in addition to the Refresh and Home buttons):

Button	Description
Retrieve All MSs Data	Click to return to the previous screen displaying summary details for all MSs served by the selected device.
De-Register MS	Click to force de-registration of the MS.
Retrieve Selected MS Full Data	Select an entry in the MS Data table and click to retrieve from the ASN-GW full details for the selected MS.

3.4 Single MS De-Registration

The Single MS De-Registration option is used to force de-registration of a specific MS.

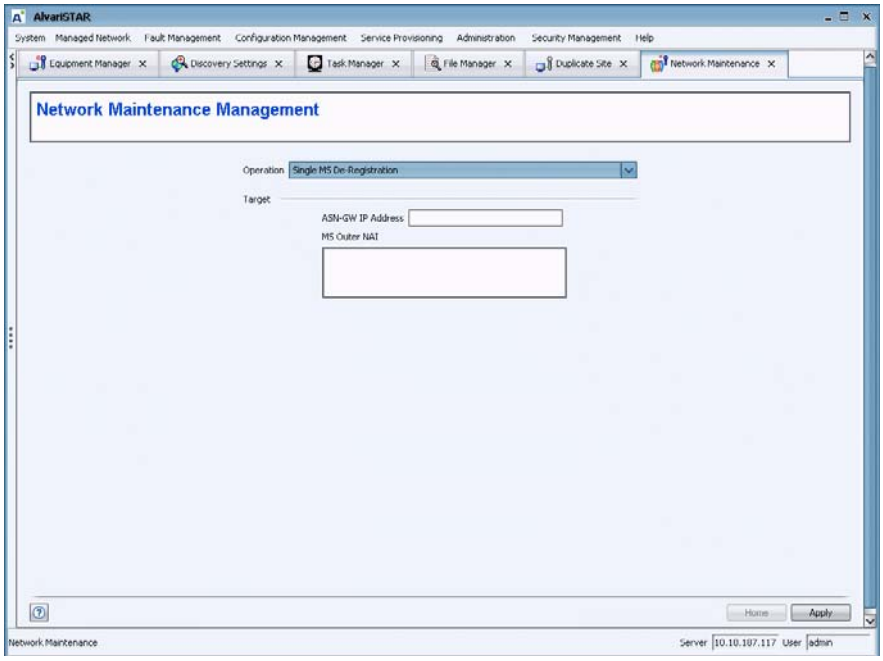


Figure 3-3: Network Maintenance - Single MS De-Registration

To force de-registration of a specific MS, enter the ASN-GW IP Address of the ASN-GW currently serving the MS (Bearer IP address), and the MS Outer NAI (the complete NAI, a string of up to 253 characters, such as {am=1}4efd450727234884ad6bf3db0d68c077@company.com). The settings of the MS identification data depends on getting this data from the AAA server.

Click **Apply** to force de-registration of the specified MS.

You can click **Home** to return to the main Network Maintenance Management window.

3.5 All MSs De-Registration

The All MSs De-Registration option is used to force de-registration of all MSs served by a specific device.

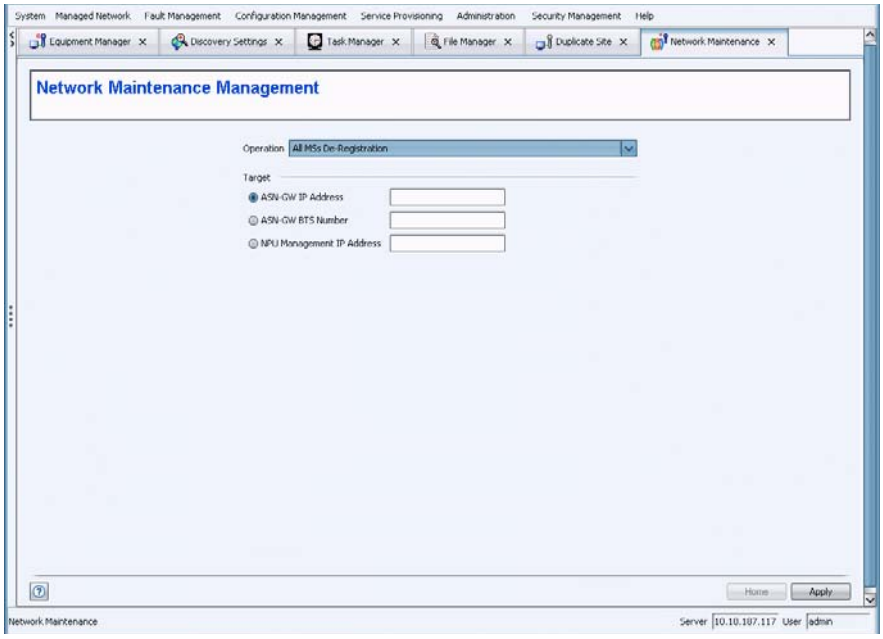


Figure 3-4: Network Maintenance - All MSs De-Registration

You can select the serving entity by:

- ASN-GW IP Address (the Bearer interface IP address of the target device).
- ASN-GW BTS Number (the BTS Number of the target device).
- NPU Management IP Address (the IP address of the interface used for managing the site (NPU) to which the ASN-GW is assigned).

Select the option you want to use and enter the applicable value in the field next to the selected option.

Click **Apply** to force de-registration of all MSs served by the specified device.

You can click **Home** to return to the main Network Maintenance Management window.

Chapter 4

The Template Manager

In This Chapter:

- "The Template Manager" on page 19
- "The Template Editor" on page 22
- "Configuring Templates" on page 23
- "ASN-GW Template" on page 29
- "BS Template" on page 63
- "Management Template" on page 90

4.1 The Template Manager

This section includes:

- "Using the Template Manager
- "Default BS Templates

4.1.1 Using the Template Manager

The Template Manager enables managing equipment configuration templates that can be used for modifying configuration of selected devices using the template-based Multiple Configuration task (see "Multiple Configuration (Template Based) Task" on page 316).

To open the Template Manager

Select *Configuration Management* > *Template Manager* from the Navigation Pane or menu bar. The Template Manager window opens.

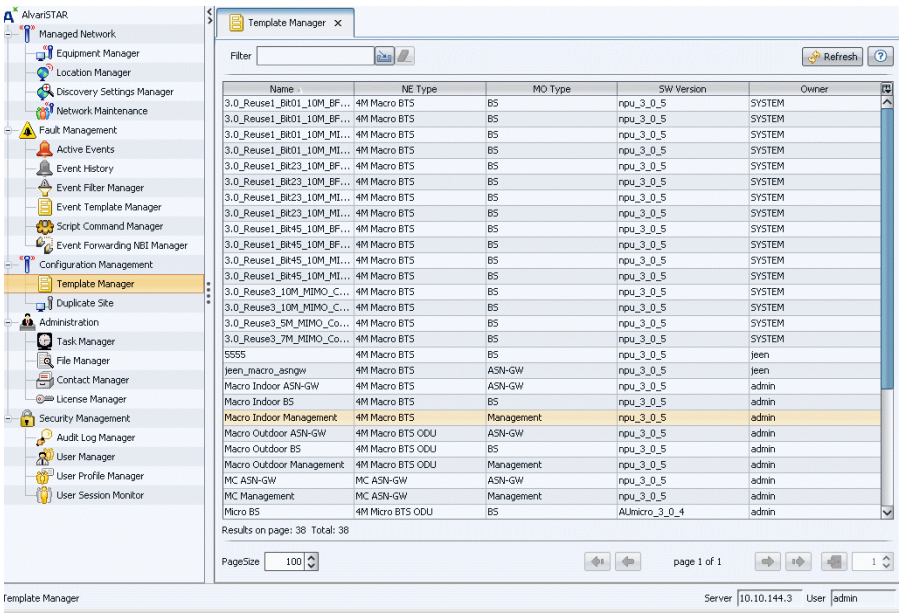


Figure 4-1: The Template Manager

You can use the Filter Criteria Manager for viewing only templates that meet one or several selection criteria.

The read-only details of displayed template are

Parameter	Description
Name	The name of the template
NE Type	The type of Network Element for which the template is prepared.
MO Type	The type of Managed Object (ASN-GW, BS, Management) for which the template is applicable.
SW Version	The SW Version used for preparing the template.
Owner	The user that created the template.

Select one or several entries and right-click to view the following management options:

Button	Description
New	Adds a new template object to the database. Click to open the Template Editor opens, allowing to enter general information on the template to be added. For more details, see “The Template Editor” on page 22. NOTE: The New option is available when right-clicking anywhere in the work area, without the need to select any existing entry.
Edit	Not available if two or more templates are selected. Opens the Template Editor for the selected template, allowing to edit the Name and Description of the template. All other general details of an existing template cannot be modified. For more details, see “The Template Editor” on page 22.
Copy	Not available if two or more templates are selected. Opens the Template Editor for a new template, that is identical to the selected “source” template, with the default name of “Copy of <source template name>. You can edit only the Name and Description of the new template. All other general details of the new template cannot be modified. For more details, see “The Template Editor” on page 22.
Configure	Not available if two or more templates are selected. Opens the Template Editor (Configure Template) for the selected template. For more details refer to “The Template Editor” on page 22. NOTE: You can also open the Template Editor by double-clicking on the selected template entry.

Button	Description
Apply	Not available if two or more templates are selected. Opens the Multiple Configuration Task editor, allowing to initiate a Multiple Configuration task using the selected template. For more details refer to "Multiple Configuration (Template Based) Task" on page 316.
Delete	Not available for default templates. Deletes the selected template(s) from the database. The application prompts you for confirmation.
Import	Imports a template XML file from the client file-system. Click to open the **Import** window, browse to the location on the client file-system where the file is stored, select the file and click **Import**. The Template Editor will open, allowing you to modify the Name and Description of the imported file. NOTE: The Import option is available when right-clicking anywhere in the work area, without the need to select any existing entry.
Export	Not available if two or more templates are selected. Exports the selected template XML file to the client file-system. Click to open the **Export** window, browse to the desired location on the client file-system, if necessary change the name to be assigned to the template file in the client file-system, and click **Export** to export the template.

4.1.2 Default BS Templates

The system is supplied with several default BS templates for some typical deployment scenarios. The template's name provide the main properties of the relevant deployment scenario, as illustrated by the following examples:

3.0 Reuse3_10M_MIMO_Capacity_Fix_Data&Voip: A template for devices running SW version 3.0, reuse 3, a bandwidth of 10MHz, MIMO diversity, optimization of capacity for Fixed deployment Data & VoIP traffic.

3.0 Reuse1_Bit23_10M_BF_Coverage_Fix_Data&Voip: A template for devices running SW version 3.0 for reuse 1 with Map Major Groups 2 and 3 selected, using a bandwidth of 10MHz, Beam Forming diversity, optimization of coverage for Fixed deployment of Data & VoIP traffic.

Default templates cannot be edited or deleted. To create a different template based on an existing default template, select the required source template and use the **Copy** option.

4.2 The Template Editor

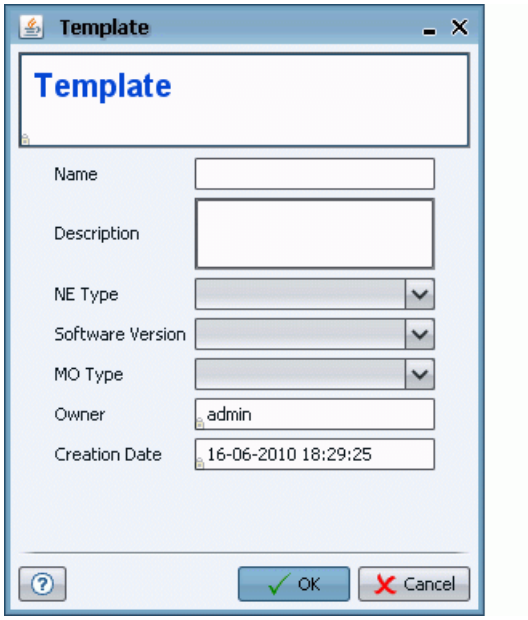


Figure 4-2: The Template Editor

The Template Editor comprises the following fields:

Parameter	Description
Name	The name of the template. A string of 1 to 128 characters.
Description	An optional free text field providing a general description of the task. A string of 0 to 250 characters.
NE Type	The type of Network Element for which the template is prepared. Can be configured only for a new template.
MO Type	The type of Managed Object (ASN-GW, BS or Management) for which the template is applicable. Can be configured only for a new template.
SW Version	The SW Version used for preparing the template. Can be configured only for a new template.
Owner	Read-only. The user that created the template.
Creation Date	Read-only. The date and time of template's creation.

4.3 Configuring Templates

This section includes:

- "The Template Configuration Editor
- "Managing Tables and Template Modes
- "Updating Scalars

4.3.1 The Template Configuration Editor

The Template Configuration Editor enables managing the parameters included in the selected template.

There are two types of parameters: Scalars (a single instance in each managed object) and tables that may contain multiple rows (multiple instances of the relevant parameters in each managed object). Each template tab can include either only scalars or a single table.

IMPORTANT

The default values specified for different parameters are the default values in the device. Certain default values used by the templates may differ from the specified default values.

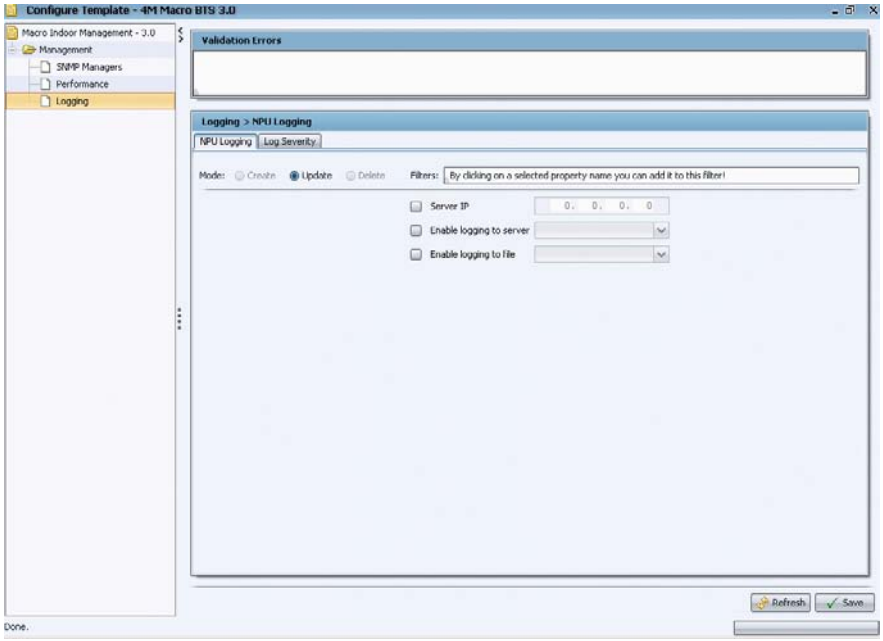


Figure 4-3: The Template Configuration Editor, Tab with Scalar Parameters

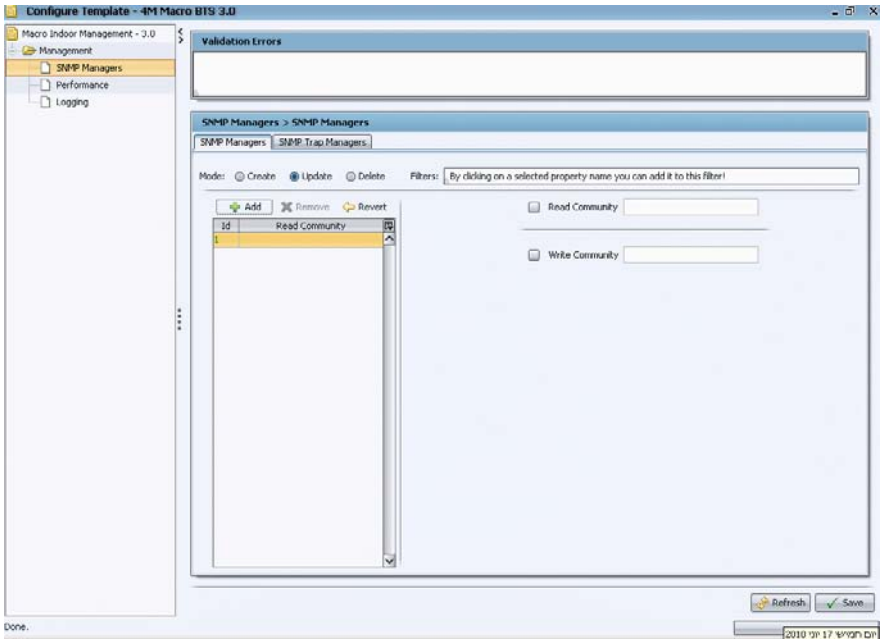


Figure 4-4: The Template Configuration Editor, Tab with a Table

The Template Configuration Editor screen comprises the following sections:

Section	Description
Navigation Pane	Allowing selection of the configuration page for the selected group of parameters.
Title Bar	Identifies the template's MO (Managed Object) and SW Version. It also includes standard icons for minimizing, maximizing or closing the Configuration Editor.
Validation Errors	Display area for possible configuration errors such as a value that is not valid or contradiction between configured values of two or more parameters. Configurations with Validation Errors cannot be saved.
Page and Tab Identification	Identification of the current Page and Tab.
Tab Selection	Allow selection of the configuration tab for the selected sub-group of parameters.
Mode	Applicable only for some tabs with tables. In a tab with scalar values, only the Update mode is applicable. Enables selection of the configuration mode (Create/Update/Delete) for the relevant table's entries. For more details refer to "Managing Tables and Template Modes below.
Filters	Applicable only for some tabs with tables using Update or Delete Mode. Displays the selected filtering criteria (parameter and value for each selected filter). For more details on using filters refer to "Managing Tables and Template Modes below.
Configuration Area	The work area allowing you to manage the relevant parameters.
Control Button	**Save**: Implements the modifications to the template. Exiting the Configuration Template Editor or switching to another page without applying discards the changes. **Refresh**: Updates the displayed information according to current values acquired from the database.
Status Bar	Indicates the status of the current operation, and displays a progress bar when applicable.

4.3.2 Managing Tables and Template Modes

The principles of managing template tables depend on the template Mode:

- "Managing Tables in Create Mode
- "Managing Tables in Update Mode
- "Managing Tables in Delete Mode

4.3.2.1 Managing Tables in Create Mode

Each row in the table includes one or more parameters that provides a unique identification of the entry. In Create Mode The row identifier(s) are mandatory and are displayed for each saved entry.

To add a row to the table click on the Add button above the table. A row will be added to the table, and a row configuration editor will open on the right side, enabling you to configure row parameters. Select the parameters to be configured by marking the check-box to the left a parameter name, and configure the required value for each selected parameter. Parameters that were not selected will be configured with the default value. The mandatory row identifier(s) are always selected and must be configured.

The row identifier(s) must be defined taking into account the relevant existing row identifier in the target objects that will participate in the Multiple Configuration task using the template. A row with row identifier(s) that already exist in the managed object will be rejected. If the table in a target device is full, the create new entry operation will be rejected.

After completing configuration of the new row, click on the Save button at the bottom of the page. The new row(s) will be displayed with the configured identifier(s).

As long as the row is colored green (not saved yet), you can remove it by clicking on the Revert button above the table.

Select a previously saved row (colored black) to edit its parameters.

To delete a previously saved row, select it and click on the Remove button above the table. The row will be colored red. Actual deletion will take effect after clicking on the Save button.

Note that there are some dependencies among certain tables that should be taken into account when designing Create Mode templates. For example, if you want to create a new Service Group associated with a new Service Interface, the Service Interface must exist in the target objects before you can create the new Service Group. This means that you have first to run a Multiple Configuration task using a template containing the new Service Interface in Create Mode, and after successful completion of this task run another Multiple Configuration task using a different template containing the new Service Group in Create Mode.

4.3.2.2 Managing Tables in Update Mode

Each row in the table has one or more parameters that provides a unique identification of the entry. In Update mode the row identifiers are not mandatory and will be displayed for saved entries only selected for filtering or update.

To add a row to the table click on the Add button above the table. A row will be added to the table, and a row configuration editor will open on the right side, enabling you to configure the row parameters. Select the parameters to be configured by marking the check-box to the left a parameter name, and configure

the required value for each selected parameter. Parameters that were not selected will not be affected. You can select one or several parameters to be used for filtering, by selecting the parameter(s), clicking on each parameter name (that will change to italics font, blue color) and configuring the filtering value: The selected criteria (name and filtering value) for each filtering parameter will be displayed in the Filters area. Only entries that match all filtering criteria will be updated.

IMPORTANT

If you do not select any filters, all rows of the table in the target devices will be updated with the configured values (excluding default/pre-configured entries in certain tables that cannot be modified).

After completing configuration of the new row, click on the Save button at the bottom of the page. The color of the new row will change to black.

As long as the row is colored green (not saved yet), you can remove it by clicking on the Revert button above the table.

Select a previously saved row (colored black) to edit its parameters.

To delete a previously saved row, select it and click on the Remove button above the table. The row will be colored red. Actual deletion will take effect after clicking on the Save button.

4.3.2.3 Managing Tables in Delete Mode

Each row in the table has one or more parameters that provides a unique identification of the entry. In Update mode the row identifiers are not mandatory and will be displayed for saved entries only selected for filtering or update.

To add a row to the table click on the Add button above the table. A row will be added to the table, and a row configuration editor will open on the right side, enabling you to one or several parameters to be used for filtering, by selecting the parameter(s), clicking on each parameter name (that will change to italics font, blue color) and configuring the filtering value: The selected criteria (name and filtering value) for each filtering parameter will be displayed in the Filters area. Only entries that match all filtering criteria will be deleted.

IMPORTANT

If you do not select any filters, all rows of the table in the target devices will be deleted (excluding default/pre-configured entries in certain tables that cannot be deleted).

After completing configuration of filters for the new row, click on the Save button at the bottom of the page. The color of the new row will change to black.

As long as the row is colored green (not saved yet), you can remove it by clicking on the Revert button above the table.

Select a previously saved row (colored black) to edit its parameters.

To delete a previously saved row, select it and click on the Remove button above the table. The row will be colored red. Actual deletion will take effect after clicking on the Save button.

Note that there are some dependencies among certain tables that should be taken into account when designing Delete Mode templates. For example, if you want to delete a certain Service Interface that in a target device is associated with an existing Service Group, you must first delete the new Service Group. This means that you have first to run a Multiple Configuration task using a template containing the relevant Service Group in Delete Mode, and after successful completion of this task run another Multiple Configuration task using a different template containing the relevant Service Interface in Delete Mode.

4.3.3 Updating Scalars

In a tab with scalar parameters, select the parameters to be updated by marking the check-box to the left a parameter name, and configure the required value for each selected parameter. Parameters that were not selected will not be affected. You can select one or several parameters to be used for filtering, by selecting the parameter(s), clicking on each parameter name (that will change to italics font, blue color) and configuring the filtering value: The selected criteria (name and filtering value) for each filtering parameter will be displayed in the Filters area. Only devices in which the current configuration match all filtering criteria will be updated using configured values of parameters that were selected for update without being defined as filters.

4.4 ASN-GW Template

The ASN-GW Template comprises the following pages:

- "AAA Page
- "Service Group Page
- "QoS Marking Page
- "SFA Page
- "Service Profile Page
- "Hot Lining Page

4.4.1 AAA Page

The AAA page comprises the following tabs:

- "AAA Client Tab
- "AAA Access Tab

4.4.1.1 AAA Client Tab

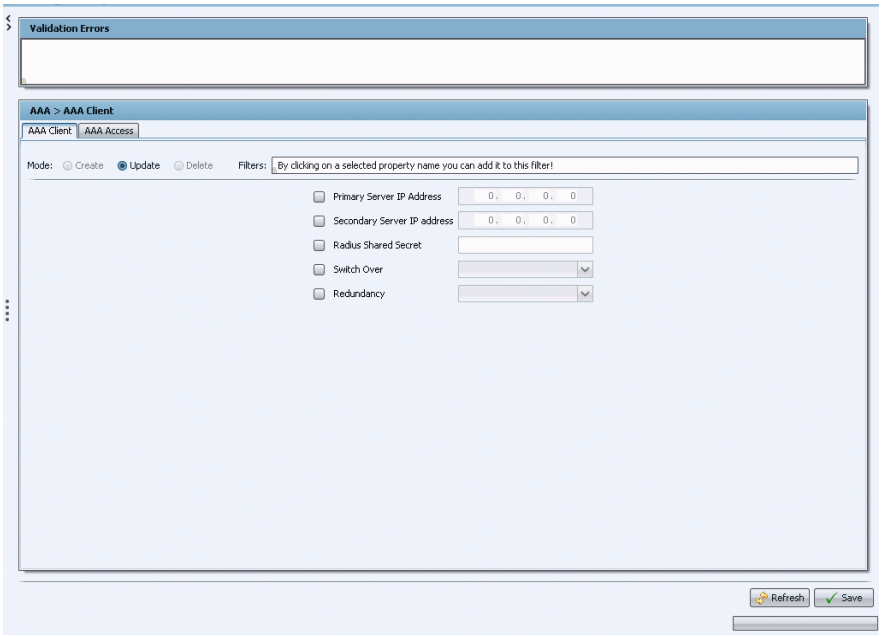


Figure 4-5: The ASN-GW Template - AAA Page - AAA Client Tab

The AAA Client parameters are:

Parameter	Description
Primary Server IP Address	The IPv4 address of the primary AAA server. Cannot be the same as the Secondary Server IP Address or any of the NPU IP interfaces. The default is 0.0.0.0 which is not a valid address (the default in the device is 172.16.0.1).
Secondary Server IP Address	The IPv4 address of the secondary AAA server. Cannot be the same as the Primary Server IP Address or any of the NPU IP interfaces. 0.0.0.0 (the default) means no secondary server. Must be set to a valid IP address if Redundancy is enabled.
RADIUS Shared Secret	The shared secret between the authenticator function and the AAA server. A string of 1 to 49 characters. The default is an empty string which is not a valid string (the default in the device is default).
Switch Over	Enable to switch from the Primary Server to Secondary Server or Vice Versa. The default is Switch Over (the default in the device is Disable).
Redundancy	Indicates whether AAA server redundancy is supported. If enabled, the ASN-GW will try switching to the secondary server if the primary server does not respond, and vide versa. The default is Enable (the default in the device is Disable). Redundancy cannot be disabled if the Current Server is the Secondary Server.

4.4.1.2 AAA Access Tab

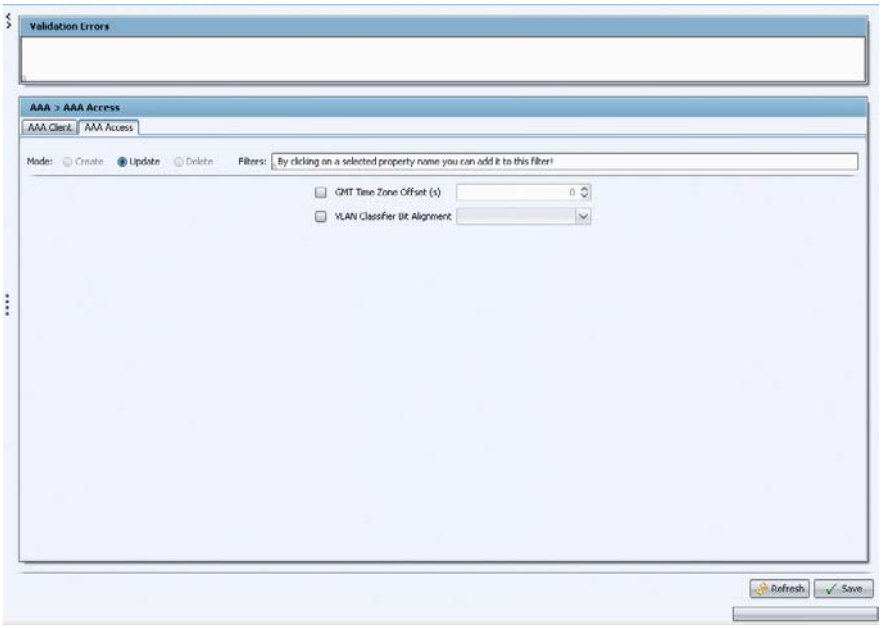


Figure 4-6: The ASN-GW Template - AAA Page - AAA Access Tab

The AAA Access parameters are:

Parameter	Description
GMT Time Zone Offset	The time zone offset, in seconds, from GMT at the NAS. The range is from 0 (the default) to 86400 seconds.
VLAN Classifier Bit Alignment	Defines how to transfer VLAN ID between R3 and R6: ■ MSB Shift: a. When transferring classifier VID value from R3 side to R6 side, the binary value of the 12 least significant bits in R3 TLV will be copied and pasted as most significant bits in R6 TLV. b. When transferring classifier VID value from R6 to R3, the binary value of the 12 the most significant bits in R6 TLV will be copied and pasted as the 12 least significant bits in R3 TLV. ■ LSB: The whole 16 bit value of the relevant TLV will be transferred without any change when transferring classifier VID value from R3 side to R6 side and from R6 to R3. The default is MSB Shift

4.4.2 Service Group Page

The Service Group page comprises the following tabs:

- "Service Interfaces Tab
- "Service Groups Tab

4.4.2.1 Service Interfaces Tab

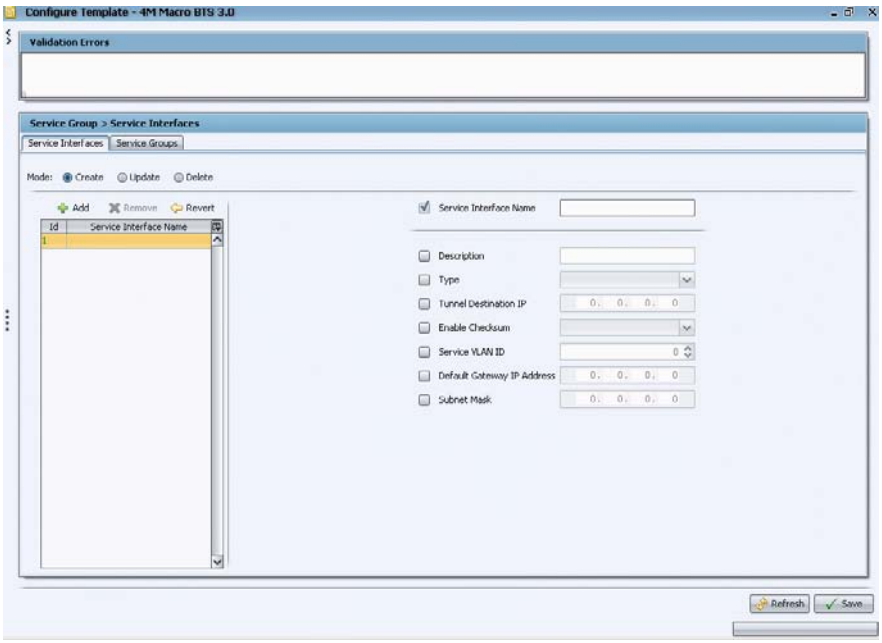


Figure 4-7: The ASN-GW Template - Service Group Page - Service Interfaces Tab (Create Mode)

The Service Interfaces table includes the following parameters for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
Service Interface Name	The name (alias) of the service interface.

The Service Interfaces Row Editor includes the following parameters:

Parameter	Description
Service Interface Name	The name (alias) of the service interface. A string of 1 to 30 characters. Must be unique in the device. Mandatory for Create Mode. The name of an existing Service Interface cannot be updated. The default is an empty string which is not a valid value.
Description	An optional brief description of the service interface. A string of up to 70 characters. The default is null.

Parameter	Description
Type	Not applicable for Update Mode (cannot be modified in an existing service interface). The type of service interface: IP-in-IP, VLAN, QinQ. The default is IP-in-IP.
Tunnel Destination IP	Not applicable for Update Mode (cannot be modified in an existing service interface). Applicable only for IP-in-IP service interface. The destination IPv4 address that indicates the point of termination of the tunnel for the service interface. Must be unique among all the Host Interfaces IPs (Bearer, Local-Management, Internal-Management, External-Management) and existing instances of Service Interface's Tunnel Destination IP Address and Default Gateway IP Address. Shall not be in the subnet of any Mgmt interface (i.e. Local, External and Internal). The default is 0.0.0.0 (must be changed to a valid value when creating a new Service Interface).
Enable Checksum	Applicable only for IP-in-IP service interfaces. Indicates whether or not the tunnel checksum feature is enabled (yes or no). The default is no.
Service VLAN ID	Not applicable for Update Mode (cannot be modified in an existing service interface). Applicable only for VLAN and QinQ service interfaces. The Service Interface VLAN ID parameter for VLAN service interface, SVID for QinQ service interface. The range is 1-9, 11- to 4094. A Service Interface VLAN ID shall not conflict with other instances of Service Interface VLAN ID and VLAN IDs of Bearer, Local-Management and External-Management interfaces. Shall also not conflict with CVID of any transparent MS. The default is 0 (if selected, must be changed to a valid value when creating a new Service Interface)
Default Gateway IP Address.	Not applicable for Update Mode (cannot be modified in an existing service interface). Applicable only for VLAN service interfaces. The IP Address of the Default Gateway. Must be unique among all the Host Interfaces IPs (Bearer, Local-Management, Internal-Management, External-Management), existing instances of Service Interface's Tunnel Destination IP Address and Default Gateway IP Address, and subnets of Default Gateway IP addresses. Should be in the same subnet.with the IP Address of the DHCP server/proxy/relay to be assigned to a service group using this service interface. The default is 0.0.0.0 (must be changed to a valid value when creating a new Service Interface).
Subnet Mask	Not applicable for Update Mode (cannot be modified in an existing service interface). Applicable only for VLAN service interfaces. The subnet mask of the default gateway. Should not overlap with an existing Interface subnet (host interfaces, other service interfaces). The default is 0.0.0.0 (must be changed to a valid value when creating a new Service Interface. the default in the device is 255.255.255.0).

NOTE

A Service Interface associated to a Service Group cannot be deleted.

A QinQ service interface associated to a service flow cannot be deleted.

4.4.2.2 Service Groups Tab

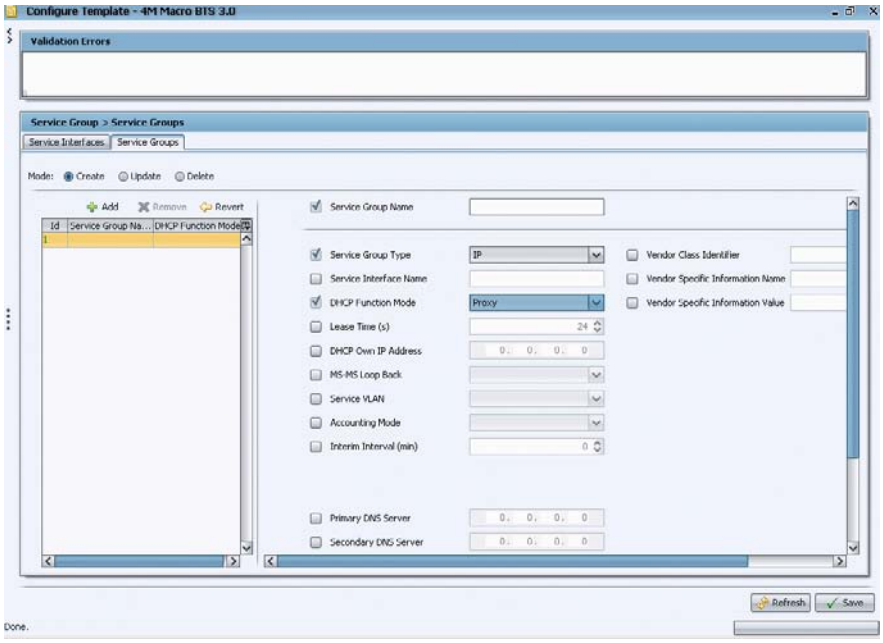


Figure 4-8: The ASN-GW Template - Service Group Page - Service Groups Tab (Create Mode)

The Service Groups table includes the following parameters for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
Service Group Name	The name (alias) of the service Group.
DHCP Function Mode	The DHCP Function Mode (if applicable).

NOTE

Service Groups with DHCP Function Type Server are not supported by the template manager since IP address Pools should be unique in the network.

The Service Group Row Editor includes the following parameters:

Parameter	Description
Service Group Name	The name (alias) of the service Group. A string of 1 to 30 characters. Must be unique in the device. Mandatory for Create Mode. The name of an existing Service Group cannot be updated. The default is an empty string which is not a valid value.
Service Group Type	Not applicable for Update Mode (cannot be modified in an existing service group). Mandatory for Create Mode. The Service Group's type: IP, VPWS-QinQ, VPWS-Transparent, VPWS-Mapped. The default is IP. The Type of an existing Service Group cannot be updated.
Service Interface Name	Not applicable for Update Mode (cannot be modified in an existing service group). Applicable only for IP Service Groups. Mandatory for Create Mode of an IP Service Group. The Service Interface Name associated to an existing Service Group cannot be updated. A string of 1 to 30 characters. The referenced Service Interface must exist in the database of the relevant managed object. Note that a Service Interface can be associated only to a single Service Group. The default is an empty string which is not a valid value.
DHCP Function Mode	Not applicable for Update Mode (cannot be modified in an existing service group). Applicable only for IP Service Groups. Mandatory for Create Mode of an IP Service Group. The DHCP Function Mode of an existing Service Group cannot be updated. The available DHCP Function Mode options: ■ Relay: The IP address is obtained using an external DHCP server (in the non-HA mode). ■ Proxy: Non-HA mode: In Non-HA mode the DHCP proxy assigns the MS, the IP address that was received from AAA in the MS profile. In HA mode the DHCP proxy assigns to the MS the IP address received in the MS profile or obtains the IP address from HA using the mobile IP. The default is Proxy.
Lease Time	Applicable only for IP Service Groups in Proxy mode. The lease time in seconds of IP address allocated for MS from this Service Group. In the Proxy mode, this value is used only if appropriate parameter is not received in RADIUS Access-Accept. The range is 24-4294967295. The default is 24 (the default in the device is 86,400).

Parameter	Description
DHCP Own IP Address	Not applicable for Update Mode (cannot be modified in an existing service group). Applicable only for IP Service Groups. The DHCP Own IP Address of an existing Service Group cannot be updated. The IP address of the DHCP relay/proxy. Must be different from other instances of DHCP Own IP Address in the device. For a service group using a VLAN service interface, should be in same subnet with the Default Gateway configured for the service interface associated with the service group. Subnet mask is taken as the default subnet mask i.e 255.255.255.0. The default is 0.0.0.0 (must be changed to a valid value when creating a new IP Service Group).
MS-MS Loopback	Applicable only for IP Service Groups. Indicates whether MS-MS loopback is enabled or disabled for the service interface. The default is Enable.
Service VLAN	Applicable only for IP Service Groups with an attached VLAN service interface. Indicates the status of a VLAN service interface attached to the service group. Not applicable when the attached Service Interface is IP-in-IP. If a Service Group with Service VLAN enabled is attached to a Service Profile, Service VLAN cannot be disabled. The default is Enable (the default in the device is Disable).
Accounting Mode	Accounting mode for the service interface: ■ None: No accounting support. ■ Time based: The ASN-GW send RADIUS Accounting Start/Stop Requests. The ASN-GW shall also send Interim Accounting requests to AAA server using RADIUS Accounting Interim messages on a preconfigured or negotiated interval. AAA server can send negotiated time interval in Access-Accept message. If the defined value (see Interim Interval below) is zero and there is no Acct-Interim-Interval in Access Accept, interim updates should be deactivated. ■ Volume and time based: Applicable only for IP Service Groups. Functionality is the same as for Time option above. In addition, this mode supports postpaid accounting by supporting IP Session Volume Based Accounting. The ASN-GW will report the cumulative volume counters for each MS IP Session. The counters will be collected per MS Service Flow and will be cumulated in order to get the MS IP Session counters. The default is Time based.

Parameter	Description
Interim Interval (Min)	Not applicable if Accounting Mode (see above) is set to None. The default interval in seconds for Accounting Interim reports to be used if Acct-Interim-Interval is not received from the AAA server. Value “0” means interim reports are deactivated unless Acct-Interim-Interval is sent by the AAA server in Access Accept messages. The valid range is 0 (none) or 5-1600 (minutes). The default is 0 ((the default in the device is 5).).
Vid Map Start and Vid Map End	Applicable only for VPWS-Mapped Service Groups. The start and end value of the range of VLAN IDs for mapping. End value cannot be lower than Start value. The range for both is from 1 to 4094. The default for Vid Map Start is 0, which is not a valid value. The default for Vid Map End is 1. None of the value within the range shall overlap with any existing infrastructure (host interfaces) VLAN IDs. None of the value within the range shall overlap with VID mapping ranges of other existing Service Groups.
Primary DNS Server	Applicable only for IP Service Groups in Proxy mode. IP Address of the first DNS Server to be provisioned to MS from this Group. In the Proxy mode, this value is used if appropriate parameter is not received in RADIUS Access-Accept. The default is 0.0.0.0.
Secondary DNS Server	Applicable only for IP Service Groups in Proxy mode. IP Address of the second DNS Server to be provisioned to MS from this Group. In the Proxy mode, this value is used if appropriate parameter is not received in RADIUS Access-Accept. The default is 0.0.0.0.
Renewal Time (% of Lease Time)	Applicable only for IP Service Groups in Proxy mode. The interval, as a percentage of the Lease Time, after which the MS can request renewal of a lease that has expired. This value is used if appropriate parameter is not received in RADIUS Access-Accept The renewal Time must be lower than rebind Time. The range is from 1 to 100 (%). The default is 1% (the default in the device is 50%).
Rebind Time (% of Lease Time)	Applicable only for IP Service Groups in Proxy mode. The rebind interval, as a percentage of the Lease Time. This is passed to the MS (DHCP client). The range is from 1 to 99. This value is used if appropriate parameter is not received in RADIUS Access-Accept. The range is from 1 to 99 (%). The default is 1% (the default in the device is 75%).

Parameter	Description
Offer Reuse Time (s)	Applicable only for IP Service Groups in Proxy mode. The interval, in seconds, within which the MS should send a DHCP request to accept the address sent by the NPU. If the MS does not accept the address within this period, the MS is deregistered. The range is from 1 to 120. The default is 1 second (the default in the device is 5).
Server Host Name	Applicable only for IP Service Groups in Proxy mode. The server host name. This parameter is sent in dhcp-offer / dhcp-ack messages and may be used by certain CPEs. A string of up to 64 characters. The default is null.
Service Time w/o IP Address	Time of waiting for DHCP request when initial Data Path is established. If expires, MS should be deregistered. The range is 0 to 86,400 seconds. A value of 0 means this timer is deactivated (and MS is not deregistered). The default is 0.
Vendor Class Identifier	Applicable only for IP Service Groups in Proxy mode. The option 60 string. Up to 30 characters. An empty string (null) means that DHCP Option 60 is disabled. The default is null (the default in the device is dslforum.org). Note that an bull string is not supported by the template manager.
Vendor Specific Information Name	Applicable only for IP Service Groups in Proxy mode. Option 43 Name string. Up to 64 characters. The default is null (the default in the device is InternetGatewayDevice.ManagementServer.URL).
Vendor Specific Information Value	Applicable only for IP Service Groups in Proxy mode. Option 43 Value string. Up to 64 characters. The default is null.
External DHCP Server IP Address	Applicable only for IP Service Groups using Relay mode. The IP address of the external DHCP server. The default is null-a valid IP address must be specified (the default in the device is 0.0.0.0).
Relay Agent Information	Applicable only for IP Service Groups in Relay mode. Enable/Disable Relay Agent Information (Option 82). The default is Enable (the default in the device is Disable).
Unicast Relay Agent Information	Applicable only for IP Service Groups in Relay mode, if Relay Agent Information is enabled. Indicates whether the Unicast parameter is enabled or disabled. The default is Enable (the default in the device is Disable).
RADIUS Attributes	Applicable only for IP Service Groups in Relay mode, if Relay Agent Information is enabled. Indicates whether RADIUS Attributes (sub-option 7) 82 is enabled or disabled. The default is Enable (the default in the device is Disable).
Service Type	Applicable only for IP Service Groups in Relay mode, if Relay Agent Information and Radius Attributes are enabled. Indicates whether Service Type (attribute 6) is enabled or disabled. The default is Enable (the default in the device is Disable).

Parameter	Description
Vendor Specific	Applicable only for IP Service Groups in Relay mode, if Relay Agent Information and Radius Attributes are enabled. Indicates whether Vendor Specific (attribute 26) is enabled or disabled. The default is Enable (the default in the device is Disable).
Session Timeout	Applicable only for IP Service Groups in Relay mode, if Relay Agent Information and Radius Attributes are enabled. Indicates whether Session Timeout (attribute 27) is enabled or disabled. The default is Enable (the default in the device is Disable).
Agent Circuit ID and Binary/ASCII Agent Circuit ID	Applicable only for IP Service Groups in Relay mode, if Relay Agent Information and Radius Attributes are enabled. Sub-option 1 of option 82. The available options are: Not Set (disable), Default, MS ID, BS ID, NAS ID, NAS IP, ASCII Agent Circuit ID, Binary Free String, Full-NAI, Domain, ASCII MS ID, ASCII BS ID, ASCII BS MAC. The default is Not Set. For ASCII Agent Circuit ID, enter the ID string in the **Binary/ASCII Agent Circuit ID** text box (up to 32 characters). For Binary Free String, enter a string of up to 32 hexadecimal digits (no spaces) in the **Binary/ASCII Agent Circuit ID** text box.
Agent Remote ID and Binary/ASCII Agent Remote ID	Applicable only for IP Service Groups in Relay mode, if Relay Agent Information and Radius Attributes are enabled. Sub-option 2 of option 82. The available options are: Not Set (disable), Default, MS ID, BS ID, NAS ID, NAS IP, ASCII Agent Remote ID, Binary Free String Full-NAI, Domain, ASCII MS ID, ASCII BS ID, ASCII BS MAC. The default is Not Set. For ASCII Agent Remote ID, enter the ID string in the **Binary/ASCII Agent Remote ID** text box (up to 32 characters). For Binary Free String, enter a string of up to 32 hexadecimal digits (no spaces) in the **Binary/ASCII Agent Remote ID** text box.
Agent Subscriber ID and Binary/ASCII Agent Subscriber ID	Applicable only for IP Service Groups in Relay mode, if Relay Agent Information and Radius Attributes are enabled. Sub-option 6 of option 82. The available options are: Not Set (disable), Default, MS ID, BS ID, NAS ID, NAS IP, ASCII Agent Subscriber ID, Binary Free String, Full-NAI, Domain. The default is Not Set. For ASCII Agent Subscriber ID, enter the ID string in the **Binary/ASCII Agent Subscriber ID** text box (up to 32 characters). For Binary Free String, enter a string of up to 32 hexadecimal digits (no spaces) in the **Binary/ASCII Agent Subscriber ID** text box.
Client Boot File Name	Applicable only for IP Service Groups in Proxy mode. The client boot file name. This parameter is sent in dhcp-offer / dhcp-ack messages and may be used by certain CPEs. A string of up to 128 characters. The default is null.

NOTE

A Service Group cannot be deleted if it is assigned to a Service Flow.

A Service Group with an associated VLAN Service Interface cannot be deleted if the Service VLAN is set to enable.

4.4.3 QoS Marking Page

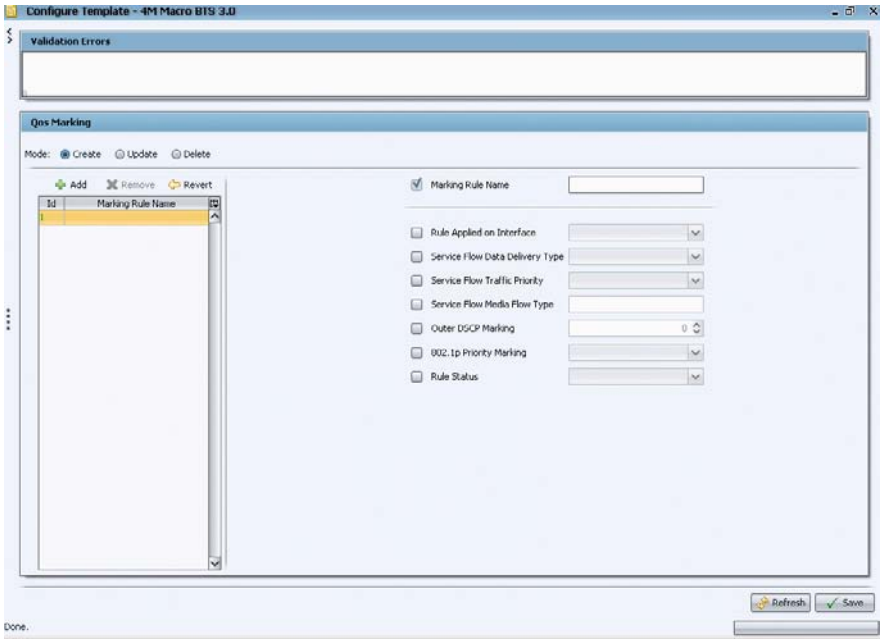


Figure 4-9: The ASN-GW Template - QoS Marking Page (Create Mode)

The QoS Marking table includes the following parameters for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
Marking Rule Name	The name (alias) of the Marking Rule.

The QoS Marking Row Editor includes the following parameters:

Parameter	Description
Marking Rule Name	The name (alias) of the Marking Rule. A string of 1 to 30 characters. Must be unique in the device. Mandatory for Create Mode. The name of an existing QoS Marking Rule cannot be updated.

Parameter	Description
Rule Applied on Interface	Not applicable for Update Mode (cannot be modified in an existing rule). The type of interface for which the bearer plane QoS rule is defined: Internal (R4/R6 tunnel), External (R1), or ANY. The default is Internal (the default in the device is ANY).
Service Flow Data Delivery Type	Not applicable for Update Mode (cannot be modified in an existing rule). The type of service provided as an input parameter for the bearer plane QoS rule: UGS, RTVR; NRTVR; BE; ERTVR, or ANY. The default is UGS (the default in the device is ANY).
Service Flow Traffic Priority	Not applicable for Update Mode (cannot be modified in an existing rule). The traffic priority provided as an input parameter for the bearer plane QoS rule: 0-7 or ANY. The default is 0 (the default in the device is ANY)
Service Flow Media Flow Type	Not applicable for Update Mode (cannot be modified in an existing rule). The media type provided as an input parameter for the bearer plane QoS rule. A string of 1 to 30 characters. A value of ANY indicates that this parameter will be ignored. The default is null (the default in the device is ANY).
Outer DSCP Marking	The Differentiated Service Code Point (DSCP) value to be used for marking the packets, if the packet complies with the marking rule's conditions. The range is from 0 to 63. The default is 0.
802.1p Priority Marking	The 802.1p priority to be used for marking traffic that complies with the marking rule's conditions. The range is from 0 to 7. The default is 0.
Rule Status	The status of the rule (Enable or Disable). The default is Disable (the default in the device is Enable).

NOTE

The default QoS Marking Rules (int_default and ext_default) can be updated but cannot be deleted.

4.4.4 SFA Page

The SFA page comprises the following tabs:

- "SFA Config Tab
- "PHS Rules Tab
- "Classification Config Tab
- "Classification Rule Protocol Tab
- "Classification Rule Source Address Tab
- "Classification Rule Destination Address Tab

- "Classification Rule Source Port Tab
- "Classification Rule Destination Port Tab
- "Classification Rule Customer VLAN ID Tab

4.4.4.1 SFA Config Tab

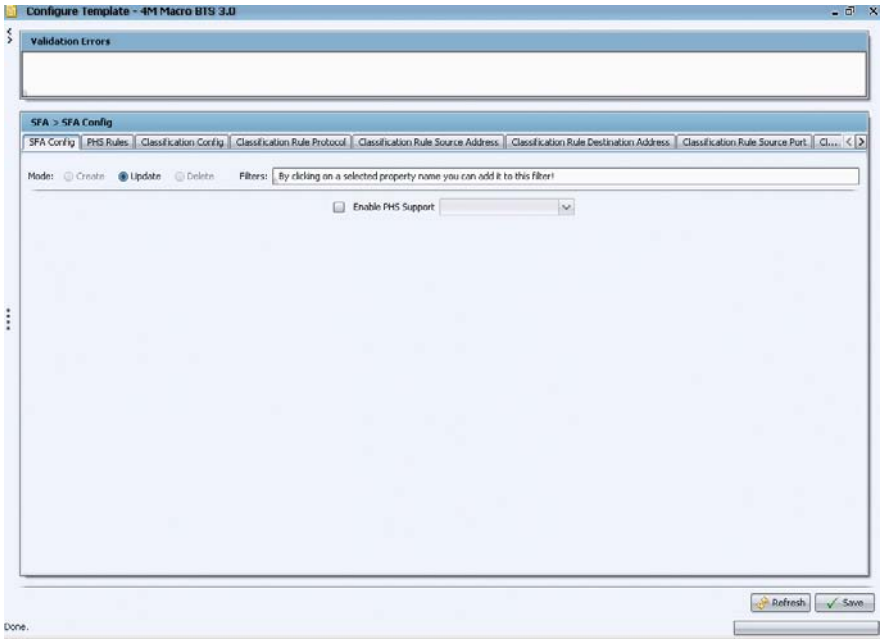


Figure 4-10: The ASN-GW Template - SFA Page - SFA Config Tab

The SFA Config tab include the following parameter:

Parameter	Description
Enable PHS Support	Indicates whether or not PHS is enabled or disabled. This setting applies to all PHS rules in the managed object. The default is no (disable).

4.4.4.2 PHS Rules Tab

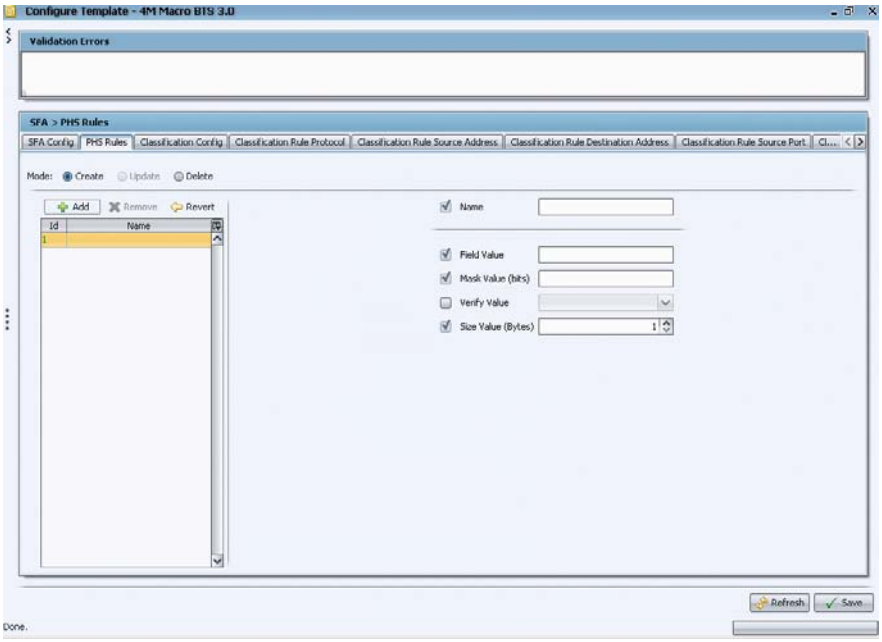


Figure 4-11: The ASN-GW Template - SFA Page - PHS Rules Tab (Create Mode)

The PHS Rules table includes the following parameters for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
Name	The name (alias) of the PHS Rule.

The PHS Rule Row Editor includes the following parameters:

Parameter	Description
Name	The name (alias) of the PHS Rule. A string of 1 to 30 characters. Must be unique in the device. Mandatory when creating a new rule.
Field Value	The PHSF value, that is, the header string to be suppressed. Mandatory when creating a new rule. The default is null. Must be replaced by a valid string
Mask Value (bits)	The PHSM that contains the bit-mask of the PHSF with the bits set that is to be suppressed. Mandatory when creating a new rule. The default is null. Must be replaced by a valid value (1-40).
Verify Value	Indicates whether or not the PHS header is to be verified. The default is no.

Parameter	Description
Size Value (Bytes)	The size of the header to be suppressed. 1-20. Mandatory when creating a new rule. The default is 1.

NOTE

An existing PHS Rule cannot be updated.

A PHS Rule that is associated to a Classification Rule cannot be deleted.

4.4.4.3 Classification Config Tab

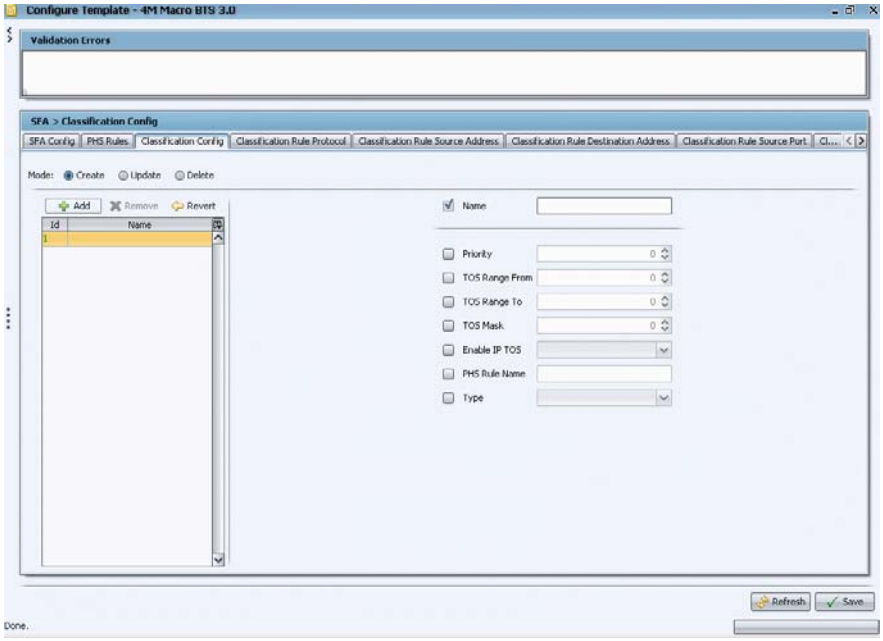


Figure 4-12: The ASN-GW Template - SFA Page - Classification Config Tab (Create Mode)

The Classification Config table includes the following parameters for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
Name	The name (alias) of the Rule.

The Classification Config Row Editor includes the following parameters:

Parameter	Description
Name	The name (alias) of the Rule. A string of 1 to 30 characters. Must be unique in the device. Mandatory for Create Mode. The name of an existing Rule cannot be updated.
Priority	The priority level assigned to the classification rule. The range is 0-255. The default is 0.
TOS Range From and TOS Range To	Applicable only if Type is L3 and Enable IP TOS is enabled. The range of values (From-To) of the IP TOS field from the lowest value to the highest value. Values range is from 0 to 63. The default is From 0 To 0.
TOS Mask	Applicable only if Type is L3 and Enable IP TOS is enabled. The mask for IP TOS value.This bit mask is applied to the TOS field received in the IP header to be matched within the configured TOS range. The range is from 0 to 63. The default is 0.
Enable IP TOS	Applicable only if Type is L3. Indicates whether the use of TOS-based classification is enabled. The default is no (disable).
PHS Rule Name	Applicable only if Type is L3. The Packet Header Suppression (PHS) rule name associated with the classification rule. Specify the PHS Rule Name if you want to perform PHS for this flow. Must be a PHS Rule Name that already exists in the target managed objects. The default is null (none), which is not a valid value.
Type	Not applicable for Update Mode (cannot be modified in an existing rule). The rule's type: L2 or L3. The default is L2 (the default in the device is L3).

A Classification Rule includes additional parameters that can be managed using the other tabs of the SFA page.

4.4.4.4 Classification Rule Protocol Tab

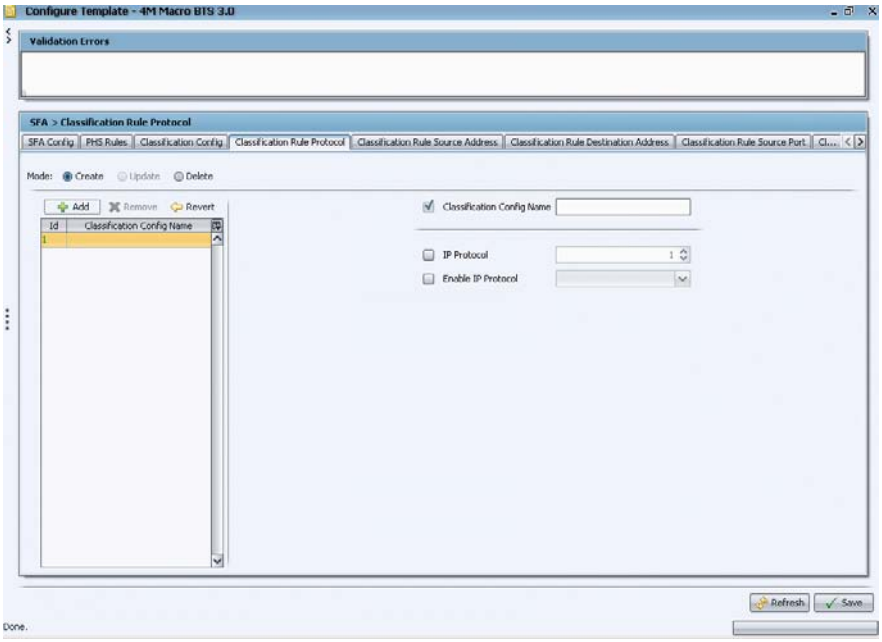


Figure 4-13: The ASN-GW Template - SFA Page - Classification Rule Protocol Tab (Create Mode)

The Classification Rule Protocol tab is applicable only for L3 rules. The IP Protocol parameters of an existing rule cannot be modified.

The Classification Rule Protocol table includes the following parameters for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
Classification Config Name	The Classification Rule name.

The Classification Rule Protocol Row Editor includes the following parameters:

Parameter	Description
Classification Config Name	The Classification Rule name. Mandatory for Create Mode. Must be a Classification Rule Name that already exists in the target managed objects.
IP Protocol	Relevant only if Enable IP Protocol is enabled. The enabled protocol number. Value is in the range 1-255 (using standard IANA protocol values). The default is 1.

Parameter	Description
Enable IP Protocol	Indicates whether the packet is classified based on the value of the IP protocol (yes or no). The default is no.

4.4.4.5 Classification Rule Source Address Tab

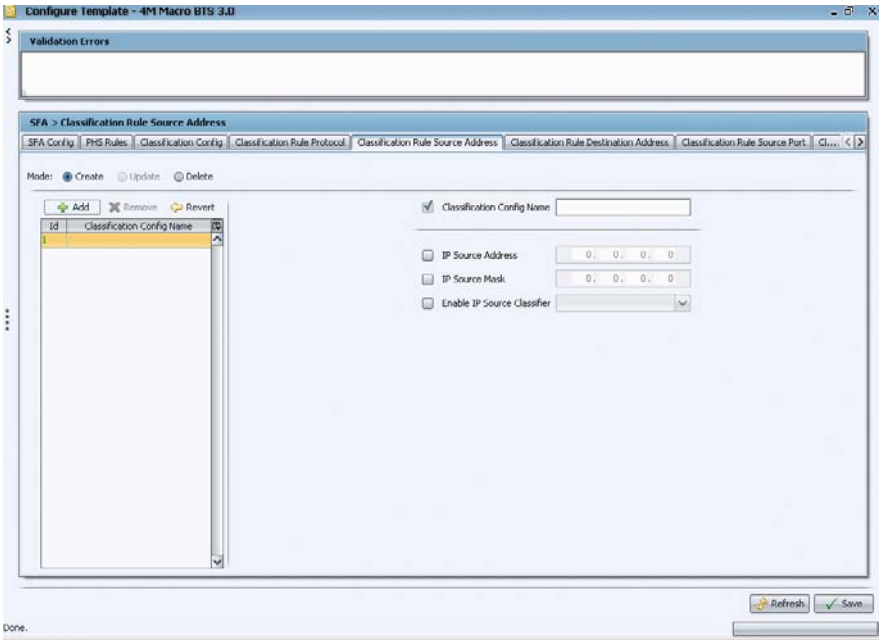


Figure 4-14: The ASN-GW Template - SFA Page - Classification Rule Source Address Tab (Create Mode)

The Classification Rule Source Address tab is applicable only for L3 rules. The Source Address parameters of an existing rule cannot be modified.

The Classification Rule Source Address table includes the following parameters for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
Classification Config Name	The Classification Rule name.

The Classification Rule Source Address Row Editor includes the following parameters:

Parameter	Description
Classification Config Name	The Classification Rule name. Mandatory for Create Mode. Must be a Classification Rule Name that already exists in the target managed objects.
IP Source Address	Relevant only if Enable IP Source Classifier is enabled. The IP source address enabled for the classification rule. The default is 0.0.0.0. Must be set to a valid value.
IP Source Mask	Relevant only if Enable IP Source Classifier is enabled. The net mask field that is used to specify a range of IP source addresses. The default is 0.0.0.0 (the default in the device is 255.255.255.255). If selected must be set to a valid value.
Enable IP Source Classifier	Indicates whether the use of an associated IP source address is enabled for the classification rule. The default is no.

4.4.4.6 Classification Rule Destination Address Tab

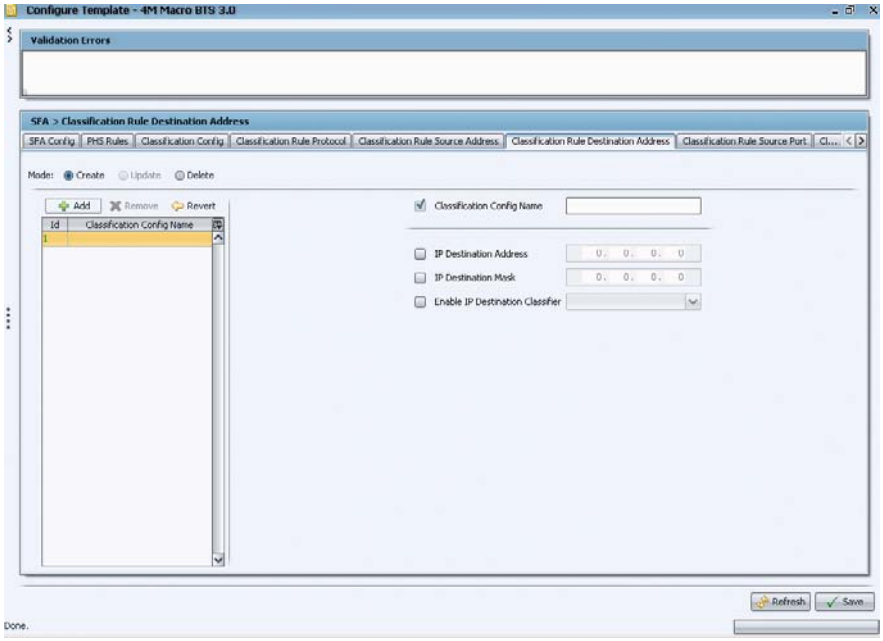


Figure 4-15: The ASN-GW Template - SFA Page - Classification Rule Destination Address Tab (Create Mode)

The Classification Rule Destination Address tab is applicable only for L3 rules. The Source Destination parameters of an existing rule cannot be modified.

The Classification Rule Destination Address table includes the following parameters for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
Classification Config Name	The Classification Rule name.

The Classification Rule Destination Address Row Editor includes the following parameters:

Parameter	Description
Classification Config Name	The Classification Rule name. Mandatory for Create Mode. Must be a Classification Rule Name that already exists in the target managed objects.
IP Destination Address	Relevant only if Enable IP Destination Classifier is enabled. The IP Destination address enabled for the classification rule. The default is 0.0.0.0. Must be set to a valid value.
IP Destination Mask	Relevant only if Enable IP Destination Classifier is enabled. The net mask field that is used to specify a range of IP Destination addresses. The default is 0.0.0.0 (the default in the device is 255.255.255.255). If selected must be set to a valid value.
Enable IP Destination Classifier	Indicates whether the use of an associated IP Destination address is enabled for the classification rule. The default is no.

4.4.4.7 Classification Rule Source Port Tab

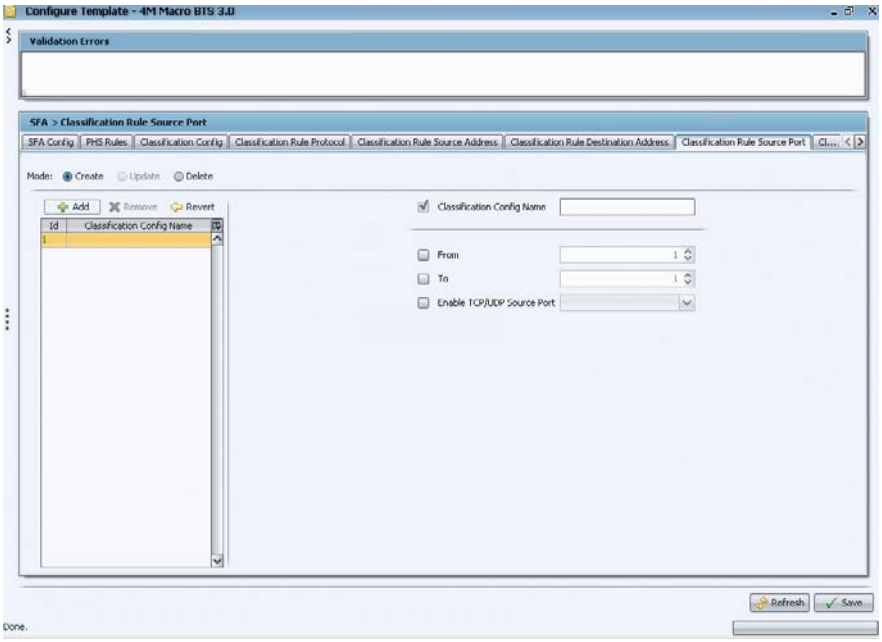


Figure 4-16: The ASN-GW Template - SFA Page - Classification Rule Source Port Tab (Create Mode)

The Classification Rule Source Port tab is applicable only for L3 rules. The Source Port parameters of an existing rule cannot be modified.

The Classification Rule Source Port table includes the following parameters for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
Classification Config Name	The Classification Rule name.

The Classification Rule Source Port Row Editor includes the following parameters:

Parameter	Description
Classification Config Name	The Classification Rule name. Mandatory for Create Mode. Must be a Classification Rule Name that already exists in the target managed objects.
From - To	Relevant only if Enable TCP/UDP Source Port is enabled. The range of values (From-To) of the source ports from the lowest value to the highest value. Values range is from 1 to 65535. The default is From 1 To 1. The default in the device is From 1 To 65535.

Parameter	Description
Enable TCP/UDP Source Port	Indicates whether the use of a range of source ports is enabled for the classification rule. The default is no. If enabled, then Enable IP Protocol for the same Classification Rule should be set to enable (automatically enabled in the device). Protocol should be set to either 6 (TCP) or 17 (UDP).

4.4.4.8 Classification Rule Destination Port Tab

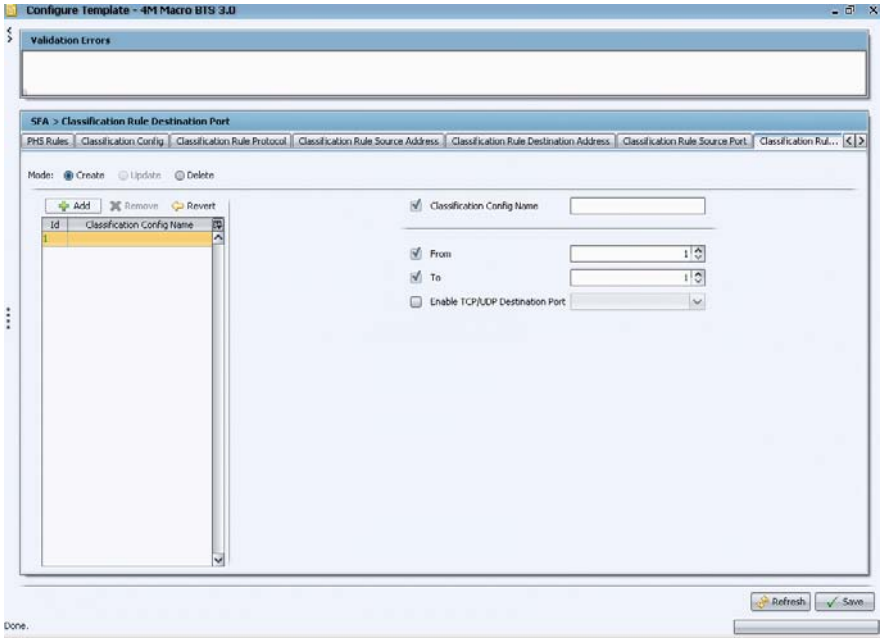


Figure 4-17: The ASN-GW Template - SFA Page - Classification Rule Destination Port Tab (Create Mode)

The Classification Rule Destination Port tab is applicable only for L3 rules. The Destination Port parameters of an existing rule cannot be modified.

The Classification Rule Destination Port table includes the following parameters for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
Classification Config Name	The Classification Rule name.

The Classification Rule Destination Port Row Editor includes the following parameters:

Parameter	Description
Classification Config Name	The Classification Rule name. Mandatory for Create Mode. Must be a Classification Rule Name that already exists in the target managed objects.
From - To	Relevant only if Enable TCP/UDP Destination Port is enabled. The range of values (From-To) of the Destination ports from the lowest value to the highest value. Values range is from 1 to 65535. The default is From 1 To 1. The default in the device is From 1 To 65535.
Enable TCP/UDP Destination Port	Indicates whether the use of a range of Destination ports is enabled for the classification rule. The default is no. If enabled, then Enable IP Protocol for the same Classification Rule should be set to enable (automatically enabled in the device). Protocol should be set to either 6 (TCP) or 17 (UDP).

4.4.4.9 Classification Rule Customer VLAN ID Tab

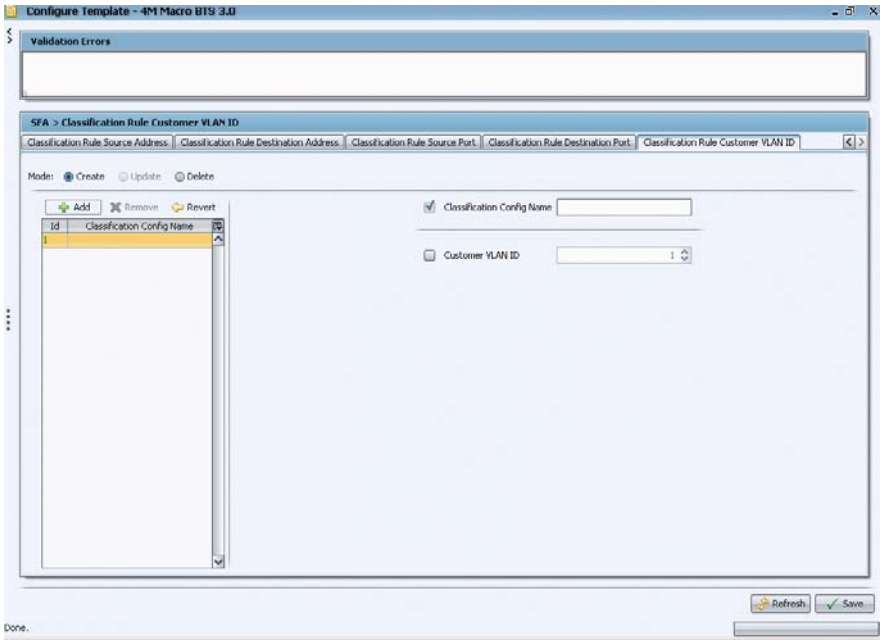


Figure 4-18: The ASN-GW Template - SFA Page - Classification Rule Customer VLAN ID Tab (Create Mode)

The Classification Rule VLAN ID tab is applicable only for L2 rules. The VLAN ID parameter of an existing rule cannot be modified.

The Classification Rule Customer VLAN ID table includes the following parameters for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
Classification Config Name	The Classification Rule name.

The Classification Rule Customer VLAN ID Row Editor includes the following parameters:

Parameter	Description
Classification Config Name	The Classification Rule name. Mandatory for Create Mode. Must be a Classification Rule Name that already exists in the target managed objects.
Customer VLAN ID	The Customer VLAN ID value to be assigned to the classification rule. The range is 1-4094. The default is 1 (in the device the default is null). Must be set to a valid value.

4.4.5 Service Profile Page

The Service Profile page comprises the following tabs:

- "Service Profile Config Tab
- "Service Flow Tab
- "UL/DL Reference Classification Rule Tabs

4.4.5.1 Service Profile Config Tab

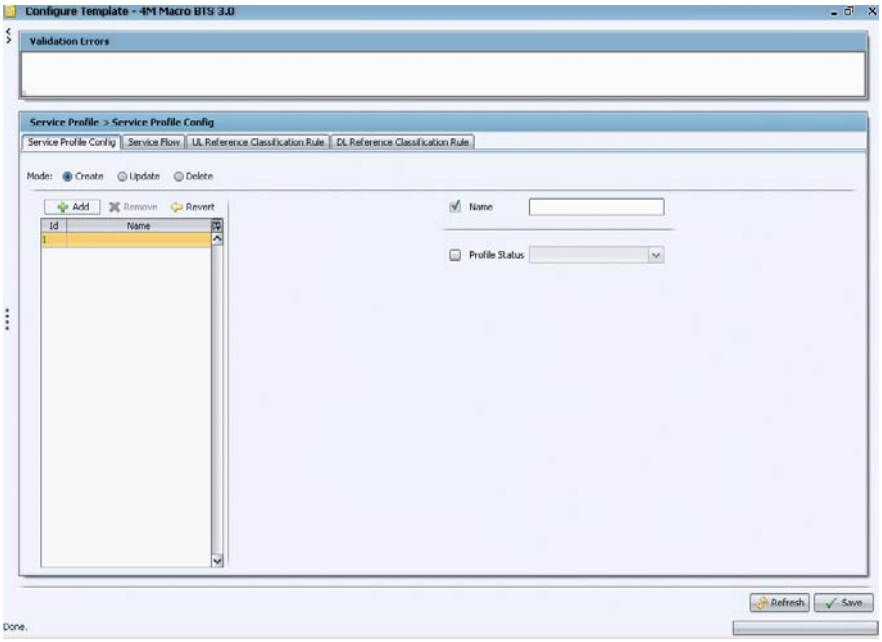


Figure 4-19: The ASN-GW Template - Service Profile Page - Service Profile Config Tab (Create Mode)

The Service Profile Config table includes the following parameters for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
Name	The name (alias) of the Service Profile.

The Service Profile Config Row Editor includes the following parameters:

Parameter	Description
Name	The name (alias) of the Service Profile. A string of 1 to 30 characters. Must be unique in the device. Mandatory for Create Mode. The name of an existing Service Profile cannot be updated.
Profile Status	Indicates whether the profile is enabled or disabled. The default is Disable. when adding a new service profile, the status can't be enabled. only after associating a service flow, the status can be updated to enabled.

4.4.5.2 Service Flow Tab

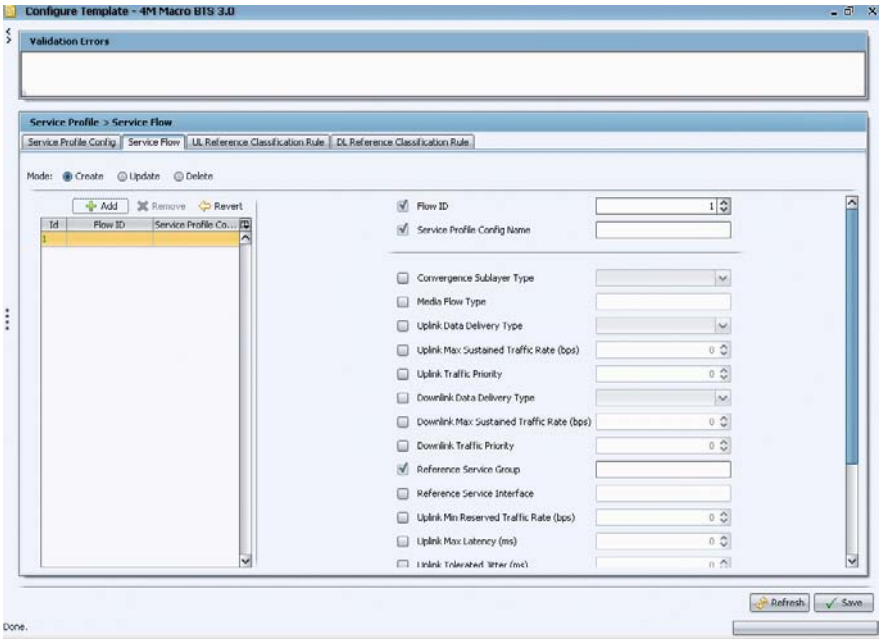


Figure 4-20: The ASN-GW Template - Service Profile Page - Service Flow Tab (Create Mode)

The Service Flow table includes the following parameters for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
Flow ID	The Flow ID of the Service Flow.
Service Profile Config Name	The name (alias) of the Service Profile.

The Service Flow Row Editor includes the following parameters:

Parameter	Description
Flow ID	The Flow ID of the Service Flow. A unique number in the range from 1 to 255. The Flow ID of an existing Service Flow cannot be updated.
Service Profile Config Name	The name (alias) of the Service Profile. Must be a Service Profile Name that exists in the target device.
Convergence Sublayer Type	Convergence Sublayer Type: ipv4cs or vlancs. The default is ipv4cs. vlancs service flows can be defined only for the Default Service Profile. The Convergence Sublayer Type of an existing Service Flow cannot be updated.

Parameter	Description
Media Flow Type	The type of media carried by the service flow. An optional string of up to 15 characters.
Uplink Data Delivery Type	The data delivery type for uplink traffic carried by the service flow. The available options are UGS; RTVR; NRTVR; BE; ERTVR and ANY. The default is UGS (the default in the device is BE).
Uplink Max. Sustained Traffic Rate (Kbps)	The maximum sustained traffic rate, in Kbps, for uplink traffic carried by the service flow. The range is 10-40000. The default is 0 (the default in the device is 250). Relevant only for service flows with the appropriate uplink data delivery type (NRTVR, RTVR, BE, ERTVR, ANY)
Uplink Traffic Priority	The traffic priority to be applied to the uplink traffic carried by the service flow. The range is 0-7. The default is 0. Not applicable for UGS data delivery type.
Downlink Data Delivery Type	The data delivery type for downlink traffic carried by the service flow. The available options are UGS; RTVR; NRTVR; BE; ERTVR and ANY. The default is UGS (the default in the device is BE).
Downlink Max. Sustained Traffic Rate (Kbps)	The maximum sustained traffic rate, in Kbps, for downlink traffic carried by the service flow. The range is 10-40000. The default is 0 (the default in the device is 250). Relevant only for service flows with the appropriate downlink data delivery type (NRTVR, RTVR, BE, ERTVR, ANY)
Downlink Traffic Priority	The traffic priority to be applied to the downlink traffic carried by the service flow. The range is 0-7. The default is 0. Not applicable for UGS data delivery type.
Reference Service Group	The Name of the Service Group to be used by the service flow. Mandatory when creating a new Service Flow. Must be the name of a Service Group that already exists in the target managed objects. VPWS Service Groups are applicable only for VLAN CS Service Flows of the Default Service Profile.
Reference Service Interface	The Name of the QinQ service interface. Must be the name of a Service Interface that already exists in the target managed objects. Applicable only for the Default Service Profile and Convergence Sublayer Type vlancs if the assigned Service Group is of type VPWS-QinQ.
Uplink Min. Reserved Traffic Rate (Kbps)	The minimum reserved traffic rate, in Kbps, for uplink traffic carried by the service flow. The range is 0-40000. The default is 0 (the default in the device is 250). Relevant only for service flows with the appropriate uplink data delivery type (UGS, NRTVR, RTVR, ERTVR). For NRTVER, RTVR and ERTVR-cannot be higher than the Max. Sustained Traffic Rate.

Parameter	Description
Uplink Max. Latency (ms)	The maximum latency in ms allowed in the uplink service flow. The range is 0-4294967295. The default is 0 (the default in the device is 500). Relevant only for service flows with the appropriate uplink data delivery type (UGS, RTVR, ERTVR).
Uplink Tolerated Jitter (ms)	the maximum delay variation (jitter) in milliseconds for this uplink service flow. The range is 0- 4294967295. The default is 0. Relevant only for service flows with the appropriate uplink data delivery type (UGS, ERTVR).
Uplink Unsolicited Grant Interval (ms)	The nominal interval in ms between successive data grant opportunities for this uplink service flow. The range is 0-65535. The default is 0 (the default in the device is 20). Must be lower than Uplink Max. Latency. Relevant only for uplink service flows with the appropriate uplink data delivery type (UGS, ERTVR).
Downlink Min. Reserved Traffic Rate (Kbps)	The minimum reserved traffic rate, in Kbps, for downlink traffic carried by the service flow. The range is 0-40000. The default is 0 (the default in the device is 250). Relevant only for service flows with the appropriate downlink data delivery type (UGS, NRTVR, RTVR, ERTVR). For NRTVER, RTVR and ERTVR-cannot be higher than the Max. Sustained Traffic Rate.
Downlink Max. Latency (ms)	The maximum latency in ms allowed in the downlink service flow. The range is 0-4294967295. The default is 0 (the default in the device is 500). Relevant only for service flows with the appropriate downlink data delivery type (UGS, RTVR, ERTVR).
Downlink Tolerated Jitter (ms)	the maximum delay variation (jitter) in milliseconds for this downlink service flow. The range is 0- 4294967295. The default is 0. Relevant only for service flows with the appropriate downlink data delivery type (UGS, ERTVR).

4.4.5.3 UL/DL Reference Classification Rule Tabs

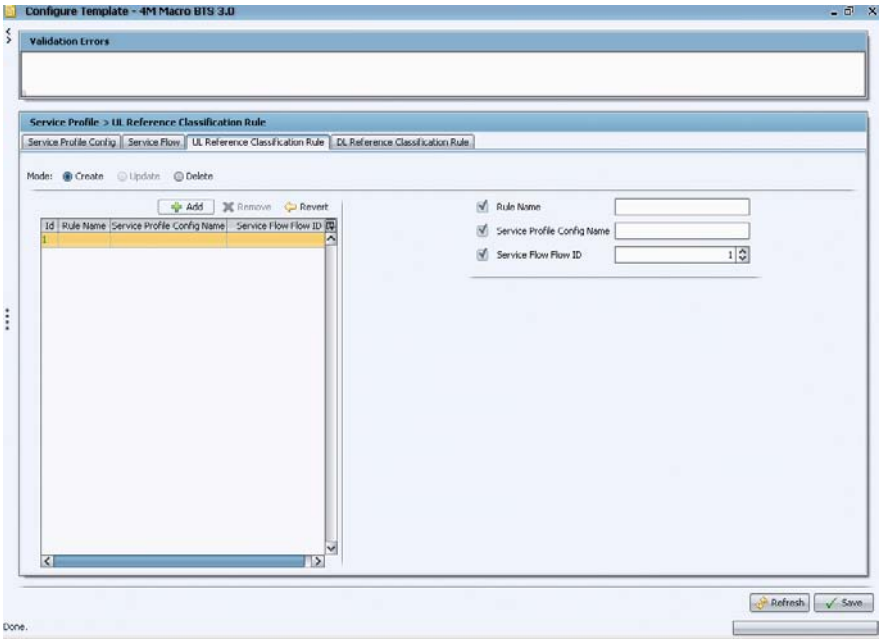


Figure 4-21: The ASN-GW Template - Service Profile Page - UL Reference Classification Rule Tab (Create Mode)

The UL/DL Reference Classification Rule tables include the following parameters for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
Rule Name	The name of the associated Classification Rule.
Service Profile Config Name	The name (alias) of the Service Profile.
Service Flow Flow ID	The Flow ID of the Service Flow.

Existing UL/DL Reference Classification Rules cannot be updated.

The UL/DL Reference Classification Rule Row Editors include the following parameters that are mandatory when creating a new rule:

Parameter	Description
Rule Name	The name of the associated Classification Rule. Must be a name of a Classification Rule that already exists in the target managed objects.

Parameter	Description
Service Profile Config Name	The name (alias) of the Service Profile. Must be a Service Profile Name that exists in the target managed objects.
Service Flow Flow ID	The Flow ID of the Service Flow. Must be a Flow ID belonging to the specified Service Profile that already exists in the target managed objects.

4.4.6 Hot Lining Page

The Hot Lining page comprises the following tabs:

- "ASN Hot Lining Tab
- "Hot Lining Profiles Tab
- "Hot Lining Access List Tab

4.4.6.1 ASN Hot Lining Tab

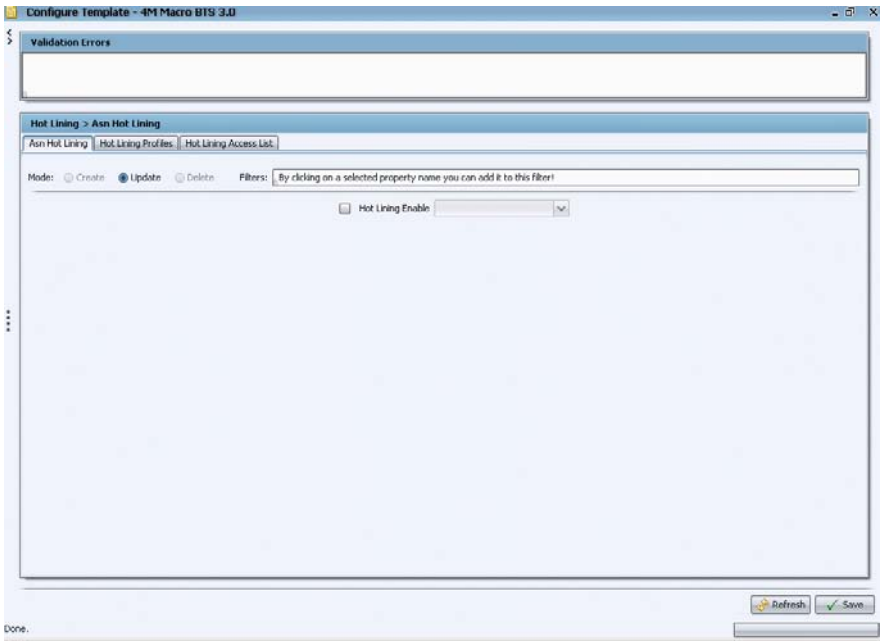


Figure 4-22: The ASN-GW Template - Hot Lining Page - ASN Hot Lining Tab

The ASN Hot Lining tab include the following parameter:

Parameter	Description
Hot Lining Enable	Indicates whether or not the Hot Lining feature is enabled or disabled. The default is Enable.

4.4.6.2 Hot Lining Profiles Tab

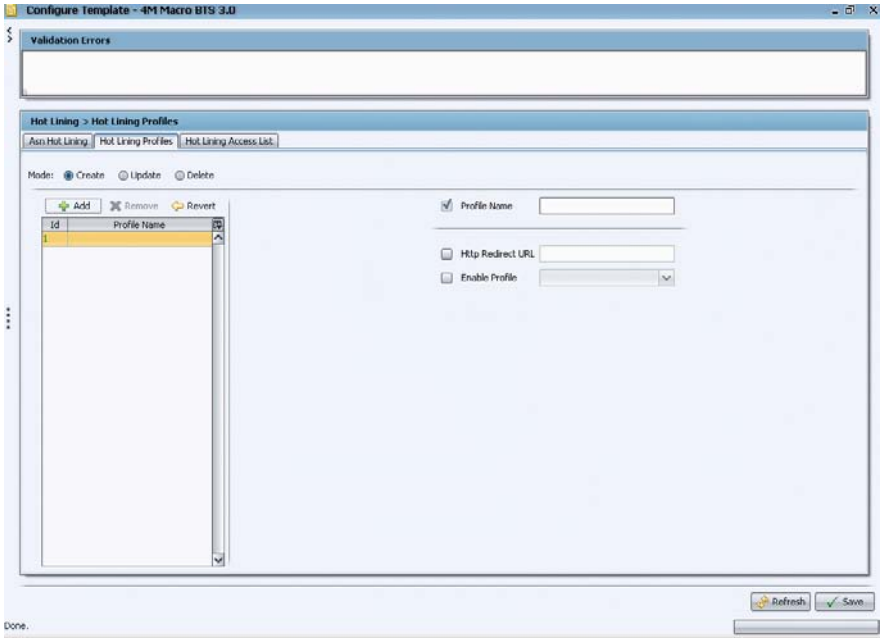


Figure 4-23: The ASN-GW Template - Hot Lining Page - Hot Lining Profiles Tab (Create Mode)

The Hot Lining Profiles table includes the following parameters for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
Profile Name	The name (alias) of the Hot Lining Profile.

The Hot Lining Profiles Row Editor includes the following parameters:

Parameter	Description
Profile Name	The name (alias) of the Hot Lining Profile. A string of 1 to 30 characters. Must be unique in the device. Mandatory when creating a new profile.

Parameter	Description
HTTP Redirect URL	The HTTP redirect URL to be used by filter rules with HTTP Redirect action. This is the Redirection location to be used in Http-Redirection message. Must be configured (URL in ASCII string format) if in any of the filter rules associated with the profile the configured action is HTTP Redirect. the string should be start with http:// or https://.
Enable Profile	Enables/Disables the hot lining profile, The default is Disable.

4.4.6.3 Hot Lining Access List Tab

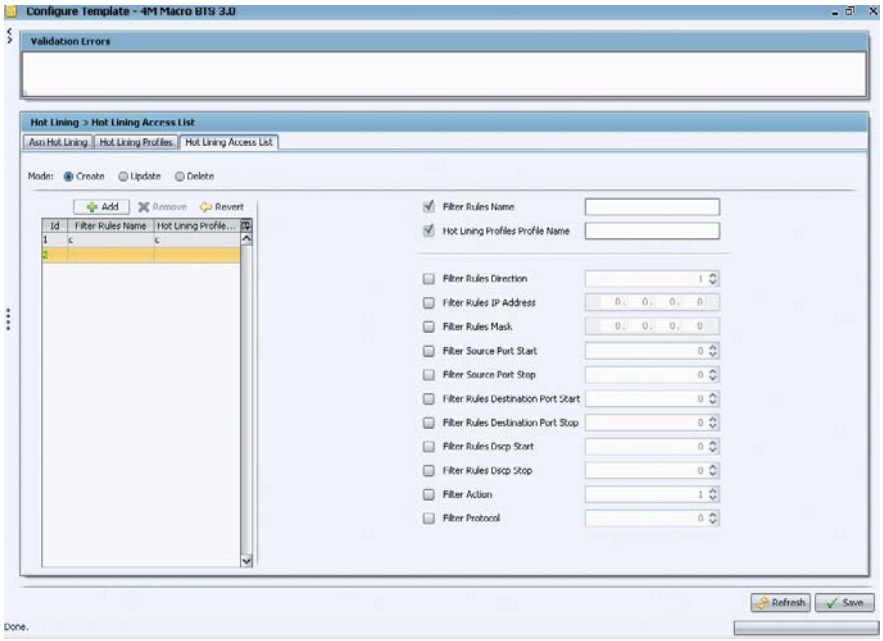


Figure 4-24: The ASN-GW Template - Hot Lining Page - Hot Lining Access List Tab (Create Mode)

The Hot Lining Access List table includes the following parameters for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
Filter Rules Name	The name (alias) of the Filter Rule.
Hot Lining Profiles Profile Name	The name (alias) of the Hot Lining Profile.

The Hot Lining Access List Row Editor includes the following parameters:

Parameter	Description
Filter Rules Name	The name (alias) of the Filter Rule. A string of 1 to 30 characters. Must be unique in the device. Mandatory when creating a new rule.
Hot Lining Profiles Profile Name	The name (alias) of the Hot Lining Profile. A string of 1 to 30 characters. Must be a name of a Profile that already exists in the target managed objects.
Filter Rules Direction	The direction for which the rule should be applied: Uplink or Downlink. The default is Uplink.
Filter Rules IP Address	If Direction is Downlink then this is the downlink Source IP Address. If Direction is Uplink then this is the uplink Destination IP Address 255.255.255.255 means not applicable (ignore this condition). The default is 0.0.0.0 (in the device the default is 255.255.255.255).
Filter Rules Mask	The Subnet Mask associated with the configured IP Address. The default is 0.0.0.0 (in the device the default is 255.255.255.255).
Filter Source Port Start	The minimum value of source TCP/UDP port range. The default is 0.
Filter Source Port Stop	The maximum value of source TCP/UDP port range. The default is 0 (in the device the default is 65535).
Filter Rules Destination Port Start	The minimum value of destination TCP/UDP port range. The default is 0.
Filter Rules Destination Port Stop	The maximum value of destination TCP/UDP port range. The default is 0 (in the device the default is 65535).
Filter Rules DSCP Start	The minimum value of DSCP range. The default is 0.
Filter Rules DSCP Stop	The maximum value of DSCP range. The default is 0 (in the device the default is 63).
Filter Action	Action to be performed on packets that match the rule: Pass, Drop, HTTP Redirect. The default is Pass. HTTP Redirect is applicable only if Direction is Uplink. If set to HTTP Redirect then HTTP Redirect Address must be defined.
Filter Protocol	The IP protocol number (1-255). 255 means “any” (ignore this condition). The default is 0 (in the device the default is 255).

4.5 BS Template

The BS Template comprises the following pages:

- "Radio Basic Page
- "Radio Advanced Page
- "R6/R8 Bearer Interface

4.5.1 Radio Basic Page

The Radio Basic page comprises the following tabs:

- "General Def Tab
- "RF Tab
- "Base Band Tab
- "Air Frame Structure Tab
- "Triggers Tab

4.5.1.1 General Def Tab

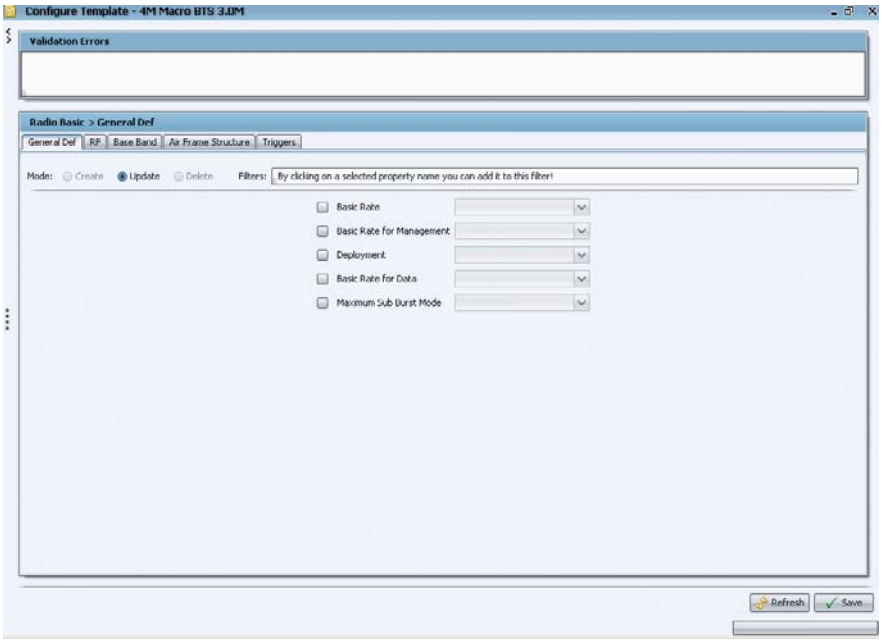


Figure 4-25: The BS Template - Radio Basic Page - General Def Tab

The General Def parameters are:

Parameter	Description
Basic Rate	The uplink basic rate. ■ QPSK 1/2 Repetition 6 ■ QPSK 1/2 Repetition 4 ■ QPSK 1/2 Repetition 2 ■ QPSK 1/2 ■ QPSK 3/4 ■ 16-QAM 1/2 ■ 16-QAM 3/4 ■ 64-QAM 1/2 ■ 64-QAM 2/3 ■ 64-QAM 3/4 ■ 64-QAM 5/6 The default is QPSK 1/2 Repetition 6 (the default in the device is QPSK 1/2)

Parameter	Description
Basic Rate for Management	The downlink basic rate for management. ■ QPSK 1/2 Repetition 6 ■ QPSK 1/2 Repetition 4 ■ QPSK 1/2 Repetition 2 ■ QPSK 1/2 ■ QPSK 3/4 ■ 16-QAM 1/2 ■ 16-QAM 3/4 ■ 64-QAM 1/2 ■ 64-QAM 2/3 ■ 64-QAM 3/4 ■ 64-QAM 5/6 The default is QPSK 1/2 Repetition 6 (the default in the device is QPSK 1/2)
Deployment	The type of deployment in the area served by the BS: Fix or Mobile. To support proper handover, should be set to Fix only if mobile MSs are not expected. The default is Fix.

Parameter	Description
BS Basic Rate for Data	The downlink basic rate for data. ■ QPSK 1/2 Repetition 6 ■ QPSK 1/2 Repetition 4 ■ QPSK 1/2 Repetition 2 ■ QPSK 1/2 ■ QPSK 3/4 ■ 16-QAM 1/2 ■ 16-QAM 3/4 ■ 64-QAM 1/2 ■ 64-QAM 2/3 ■ 64-QAM 3/4 ■ 64-QAM 5/6 The default is QPSK 1/2 Repetition 6 (the default in the device is QPSK 1/2)
Maximum Sub Burst Mode	The maximum size of a downlink sub-burst. The value of this parameter affects the achievable throughput in MIMO B point-to-point links (one MS) as follows: Basic: up to 12 Mbps Standard: up to 20 Mbps Enhanced: up to 25 Mbps. Trial: up to 30 Mbps Maximum throughput for two MSs may be increased to up to 16Mbps per MS when set to Standard, Enhanced or Trial. The default is Basic

4.5.1.2 RF Tab

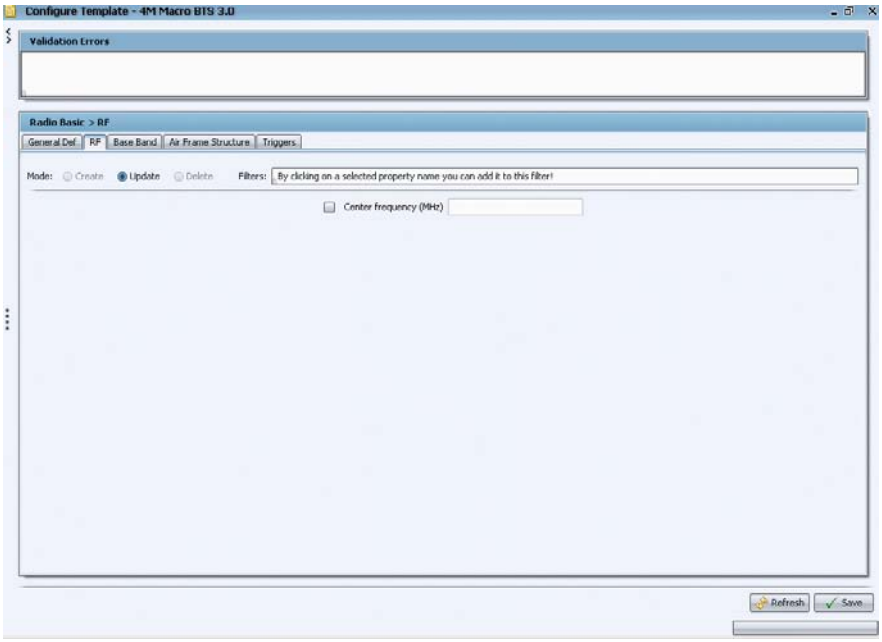


Figure 4-26: The BS Template - Radio Basic Page - RF Tab

The RF parameter is:

Parameter	Description
Center frequency	The center of the frequency band in which the BS will transmit, in MHz. The available values, in accordance with the bands supported by different ODUs, are: ■ 2022.5 to 2217.5 in steps of 0.125 ■ 2302.5 to 2397.5 in steps of 0.125 ■ 2487.5 to 2687.5 in steps of 0.125 ■ 3302.5 to 3397.5 in steps of 0.125 ■ 3402.5 to 3797.5 in steps of 0.125 The available values for Center Frequencies indicated above are for a Bandwidth of 5 MHz. For a different bandwidth, the actually valid values are from f1+1/2BW to f2-1/2BW, where f1 is the lowest frequency of the ODU's radio band, f2 is the highest frequency of the ODU's band, and BW is the configured bandwidth. Note that ODU-2305-2360-000N-36-1x1-Y-0 includes two bands: 2305-2320, 2345-2360 MHz.

4.5.1.3 Base Band Tab

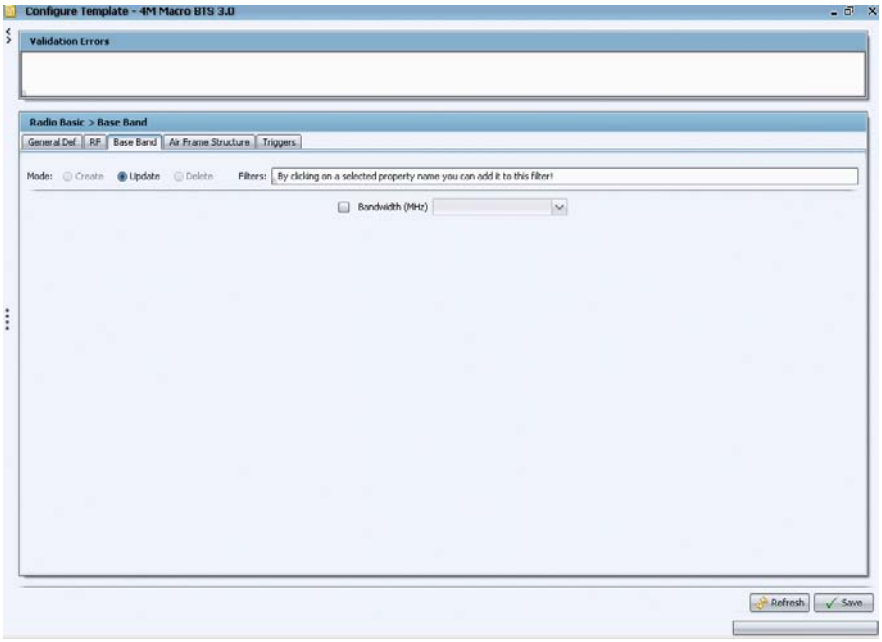


Figure 4-27: The BS Template - Radio Basic Page - Base Band Tab

The Base Band parameter is:

Parameter	Description
Bandwidth	The BS channel bandwidth (5 MHz, 7 MHz, 10MHz). The default is 5 MHz. 7 MHz is not applicable for units in 2.x GHz bands.

4.5.1.4 Air Frame Structure Tab

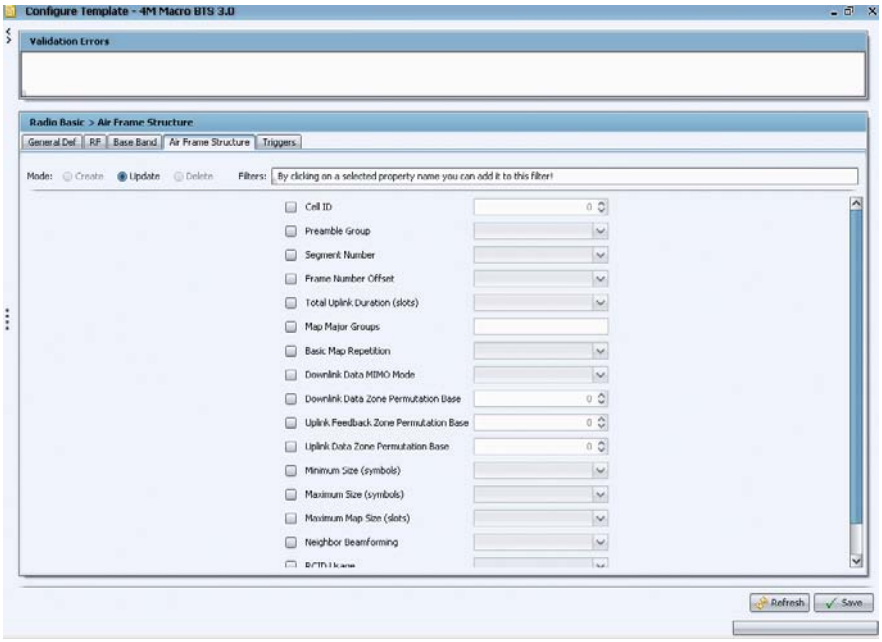


Figure 4-28: The BS Template - Radio Basic Page - Air Frame Structure Tab

The Air Frame Structure parameters are:

Parameter	Description
Cell ID	The Cell ID (IDCell) used for preamble selection. The range is from 0 to 31. The default is 0.
Preamble Group	The preamble group (1 or 2). A value of 2 is applicable only for the following combinations of Segment Number and Cell ID values: Segment Number=0, Cell ID=0, 3, 6, 9, 12, 15. Segment Number=1, Cell ID=1, 4, 7, 10, 13, 16. Segment Number=2, Cell ID=2, 5, 8, 11, 14, 17 The default is 1.
Segment Number	The segment (BS) number in a three sector BS (0-2). This number influences the values available for Preamble Group selection (see above) preamble selection and the configuration of Map (see below) used for the FDC transmission. The default is 0.
Frame Number Offset	Controls the offset applied between the internal frame count and the reported frame number. The available options are Zero (0) and Random. If Random is selected, the AU will choose a random number between 0 to 15. The default is 0.

Parameter	Description
Total Uplink Duration	The total duration of the uplink in a frame, in slots (one slot equals 3 symbols). To avoid BS-BS interference, the ul-dl-allocation must be identical in all BSs in a geographical region. The range is 4-7 or 10 for bandwidth of 5 or 10MHz, 3-5 or 7 for bandwidth of 7MHz. The default is 3 (in the device the default is 6). After each change in the Bandwidth parameter the value must be configured to a proper value.
Map	The allocated to the BS for maps transmission, as indicated by a 6 bits (bits 0 - 5) string. If BW=5 MHz, bits 1, 3 and 5 are not relevant. Bits 0, 2, 4 must be set to 1. Configure 101010. If BW=7/10 MHz with reuse 1, all bits (0 to 5) must be set to 1. Configure 111111. For BW=7/10 MHz with Reuse 3: ■ If Segment Number is 0, then bits #0 and 1 should be set to 1. Configure 110000. ■ If Segment Number is 1, then bits #2 and 3 should be set to 1. Configure 001100. ■ If Segment Number is 2, then bits #4 and 5 should be set to 1. Configure 001111. The default is null (in the device the default is 000000 - all bits not set).
Basic Map Repetition	The basic repetition used in the transmission of the maps using QPSK 1/2. The available options are 1, 2, 4 and 6. (1 means no repetitions). The default is 1 (in the device the default is 6).
Downlink Data MIMO Mode	The downlink diversity mode used by the system: Matrix A/B or Beam Forming. The Beam Forming option is not applicable for 2-channels AU (Macro Outdoor BTS) and Micro Outdoor BTS. The default is Matrix A/B.
Downlink Data Zone Permutation Base	The permutation base used in the downlink data zone. The valid range is from 0 to 31. The default is 0.
Uplink Feedback Zone Permutation Base	The permutation base used in the uplink feedback zone. The valid range is from 0 to 69. The default is 0.
Uplink Data Zone Permutation Base	The permutation base used in the uplink data zone. The valid range is from 0 to 69. The default is 0.

Parameter	Description
Minimum Size	The initial size (in symbols) of the first zone. When reuse 3 is used within first zone, this parameter should be equal across all BSs within deployment. The available options are 2, 4,....34 (2xN where N=1-17) or No Limitation. The default is No Limitation. For more details refer to "First Zone Minimum Size Recommended Value Range" on page 258. In the current release this is the actual size of the first zone. For reuse 1 the default (no limitation) can be used-the actual size will be set dynamically according to the configuration. For reuse 3 a specific value must be configured.
Maximum Size	Maximum size (in symbols) for first zone. Used mainly for performance control capability within frame. The available options are 2, 4,....34 (2xN where N=1-17) or No Limitation. The default is No Limitation. Maximum Size cannot be lower than Minimum Size. In the current release the value of this parameter is ignored First Zone size is defined only by Minimum Size parameter.
Maximum Map Size	Limits the maximum size of maps (in slots). The available options are 10, 20,...300 (10xN where N=1-30) or No Limitation. The default is No Limitation.
Neighbor Beam Forming	Applicable only for Macro Indoor/Outdoor units operating in MIMO Matrix A/B mode. The beam forming mechanism is based on symmetry in performance between uplink and down link. To compensate for possible differences due to HW of the ODU, a special low-level calibration signal is transmitted periodically in each link. During the time this calibration signal is transmitted all other radio links of the same BS and all its neighbors should not transmit, to reduce potential interference. The Beam Forming mechanism ensures that all neighboring BSs operating in Beam Forming mode will enter into silent mode when necessary. However, since this results in slightly reduced throughput, units operating in Matrix A/B mode should enter into silent mode when necessary (based on frame number information) only if it has neighboring BSs operating in Beam Forming mode. The Neighbor Beam Forming parameter Indicates whether any of the neighboring BSs operates in Beam Forming mode. The default is Yes (in the device the default is No).

Parameter	Description
RCID Usage	Each transmitted MAP includes allocations for each MS it served, using the MS's CID for identifying each MS. The original CID includes 16 bits, which is significantly more than practically needed since a maximum of 500 MSs can be served by each BS. To reduce overhead, a smaller number of bits can be used, based on RCID (Reduced CID) defined in the standard. This mechanism can be used only if all MSs served by the BS support RCID. When enabled, CIDs of either 7 or 11 bits will be dynamically used, according to the current number of MS served at each given moment. The RCID Usage defines whether RCID is enabled or disabled. The default is Enable (in the device the default is Disable).

4.5.1.5 Triggers Tab

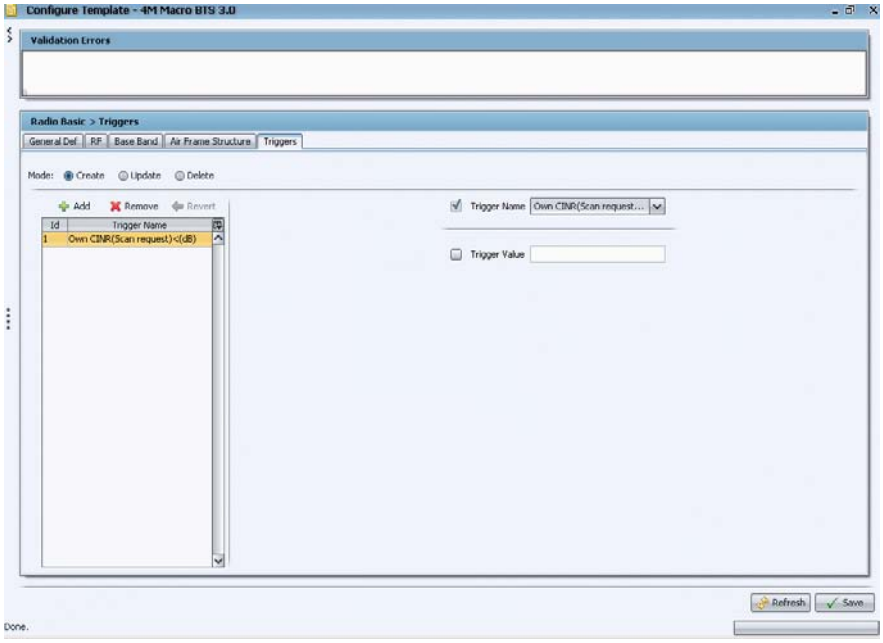


Figure 4-29: The BS Template - Radio Basic Page - Triggers Tab

Each row in the table includes a trigger name.

To add a row to the table click on the Add button above the table. The row editor window will open enabling you to select a Trigger Name from the drop-down list.

The Trigger Names must be selected taking into account the relevant existing Trigger Names in the target objects that will participate in the Multiple Configuration task using the template. In Create Mode, a Trigger Name that already exists in the managed object will be rejected. In Update or Delete Mode , a Trigger Name that does not exist in the managed object will be rejected.

The Triggers Row Editor includes the following parameters:

Parameter	Description
Trigger Name	Mandatory for all Modes. The Trigger Name that includes the Trigger Type and Action. For details refer to the table below.
Trigger Value	The threshold value for the trigger. For CINR triggers the range is -64 to 63.5 in steps of 0.5 (dB). For RSSI triggers the range is -103.75 to -40 in steps of 0.25 (dBm) For Distance triggers the range (in meters) is 0-3400 in steps of 50 if BS BW is 10 MHz, 0-6800 in steps of 50 if BS BW is 5 MHz, 0-4800 in steps of 50 if BS BW is 7 MHz.

Trigger Type	Action	Trigger Condition
Own CINR(Scan request<(dB)	Scan Request	The CINR at the Serving BS is below the Trigger threshold (in dB)
Own RSSI(Scan request)<(dBm)	Scan Request	The RSSI at the Serving BS is below the Trigger threshold (in dBm)
Distance(Scan Request)-(m)	Scan Request	The Serving BS distance from the MS (calculated by measuring the round trip delay) is above the Trigger threshold (in meter)
Neighbor CINR(Handover request)>(dB)	Handover Request	The CINR at the Neighbor BS is above the Trigger threshold (in dB)
Neighbor RSSI(Handover request)>(dBm)	Handover Request	The RSSI at the Neighbor BS is above the Trigger threshold (in dBm)
Neighbor CINR-Own CINR(Handover request)>(dB)	Handover Request	The CINR at the Neighbor BS minus the CINR at the Serving BS is above the Trigger threshold (in dB)
Neighbor RSSI-Own RSSI(Handover request)>(dBm)	Handover Request	The RSSI at the Neighbor BS minus the RSSI at the Serving BS is above the Trigger threshold (in dBm)
Distance(Handover request)-(m)	Handover Request	The Serving BS distance from the MS (calculated by measuring the round trip delay) is above the Trigger threshold (in meter)
Own CINR(Handover request)<(dB)	Handover Request	The CINR at the Serving BS is below the Trigger threshold (in dB)
Own RSSI(Handover request)<(dBm)	Handover Request	The RSSI at the Serving BS is below the Trigger threshold (in dBm)

4.5.2 Radio Advanced Page

The Radio Advanced page comprises the following tabs:

- "Ranging Tab
- "Feedback Allocations Tab
- "Power Control Tab
- "Beam Forming Tab (applicable only for Macro BTS)
- "Management Tab
- "QoS Tab

4.5.2.1 Ranging Tab

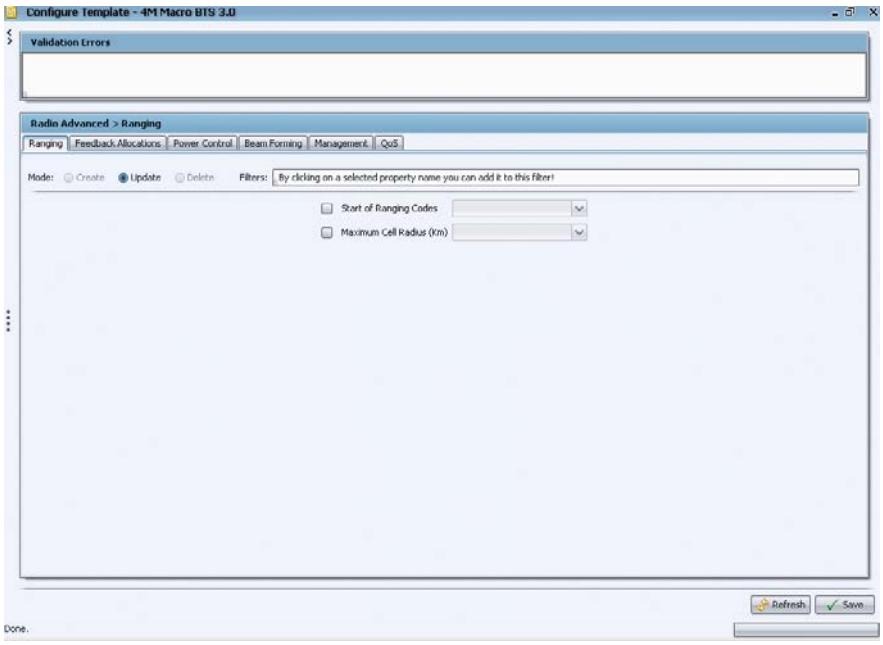


Figure 4-30: The BS Template - Radio Advanced Page - Ranging Tab

The Ranging parameters are:

Parameter	Description
Start of Ranging Codes	The starting number of the group of codes used for the uplink. The available options are 0, 64, 128, 192. The default is 0.
Maximum Cell Radius	The maximum cell radius (in km). The available values are 1, 2, 4, 8, 15, 23. 30. The default is 1 (the default in the device is 2).

4.5.2.2 Feedback Allocations Tab

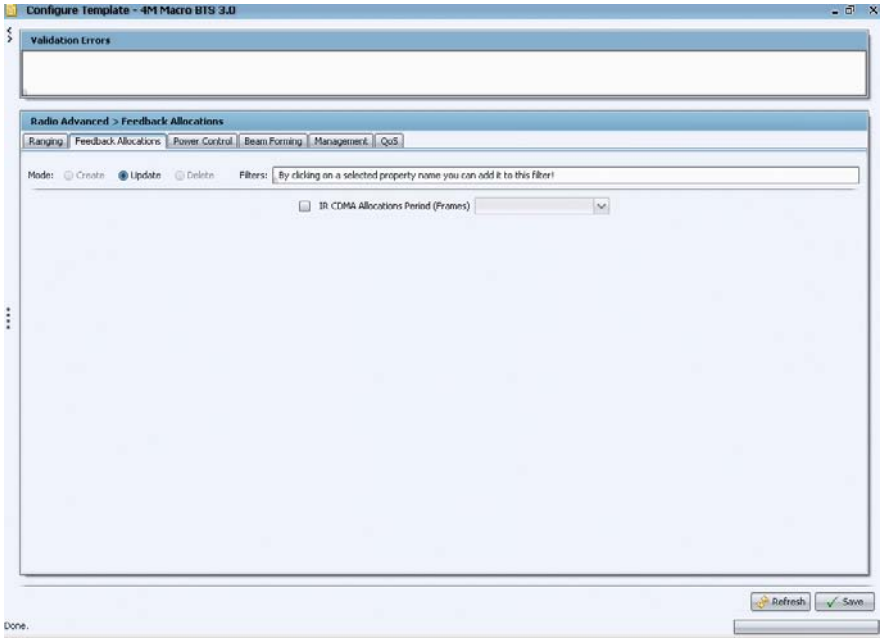


Figure 4-31: The BS Template - Radio Advanced Page - Feedback Allocations Tab

The Feedback Allocations parameter is:

Parameter	Description
IR CDMA Allocation Period	The period of IR CDMA allocations, in frames. The available options are 1, 2, 4, 6, 8, 10. The default is 1 (the default in the device is 2). In the current release actual value is always 2 (the configured value is ignored).

4.5.2.3 Power Control Tab

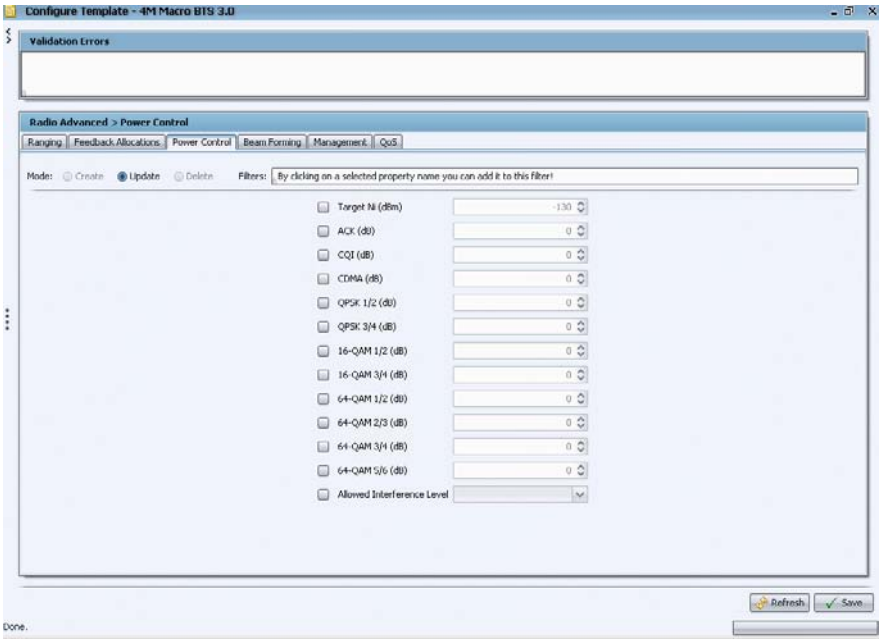


Figure 4-32: The BS Template - Radio Advanced Page - Power Control Tab

The Power Control parameters are:

Parameter	Description
Target NI	The target noise and interference level for the PUSC zone, in dBm. The range is from -130 to -110 in steps of 1 (dBm). The default is -130 (the default in the device is -127).
ACK	The C/N in dB required for sending ACK, reported to the MS for power control purposes. The range is from -20 to 50 (dB). The default is 0 (the default in the device is 7).
CQI	The C/N in dB required for sending CQI, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for ACK - 8 to Required C/N Level for ACK + 7 (see ACK parameter above. The default is 0 (the default in the device is 12).

Parameter	Description
CDMA	The C/N in dB required for transmitting CDMA, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for CQI - 8 to Required C/N Level for CQI + 7 (see CQI parameter above. The default is 0 (the default in the device is 9).
QPSK 1/2	The C/N in dB required for sending QPSK 1/2, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for CDMA - 16 to Required C/N Level for CDMA + 14 (see CDMA parameter above. The default is 0 (the default in the device is 13).
QPSK 3/4	The C/N in dB required for sending QPSK 3/4, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for QPSK 1/2 - 16 to Required C/N Level for QPSK 1/2 + 14 (see QPSK 1/2 parameter above. The default is 0 (the default in the device is 16).
16-QAM 1/2	The C/N in dB required for transmitting 16-QAM 1/2, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for QPSK 3/4 - 8 to Required C/N Level for QPSK 3/4 + 7 (see QPSK 3/4 parameter above. The default is 0 (the default in the device is 19).
16-QAM 3/4	The C/N in dB required for sending 16-QAM 3/4, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for 16-QAM 1/2 - 16 to Required C/N Level for 16-QAM 1/2 + 14 (see 16-QAM 1/2 parameter above. The default is 0 (the default in the device is 22).
64-QAM 1/2	The C/N in dB required for sending 64-QAM 1/2, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for 16-QAM 3/4 - 16 to Required C/N Level for 16-QAM 3/4 + 14 (see 16-QAM 3/4 parameter above. The default is 0 (the default in the device is 23).

Parameter	Description
64-QAM 2/3	The C/N in dB required for sending 64-QAM 2/3, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for 64-QAM 1/2 - 8 to Required C/N Level for 64-QAM 1/2 + 7 (see 64-QAM 1/2 parameter above. The default is 0 (the default in the device is 25).
64-QAM 3/4	The C/N in dB required for sending 64-QAM 2/3, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for 64-QAM 2/3 - 8 to Required C/N Level for 64-QAM 2/3 + 7 (see 64-QAM 2/3 parameter above. The default is 0 (the default in the device is 26).
64-QAM 5/6	The C/N in dB required for transmitting 64-QAM 5/6, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for 64-QAM 3/4 - 8 to Required C/N Level for 64-QAM 3/4 + 7 (see 64-QAM 3/4 parameter above. The default is 0 (the default in the device is 28).
Allowed Interference Level	Correction of maximum allowed UL MCS based on measured DL CINR. The options are Very High, High, Medium, Low. The default is Very High (the default in the device is High).

4.5.2.4 Beam Forming Tab (applicable only for Macro BTS)

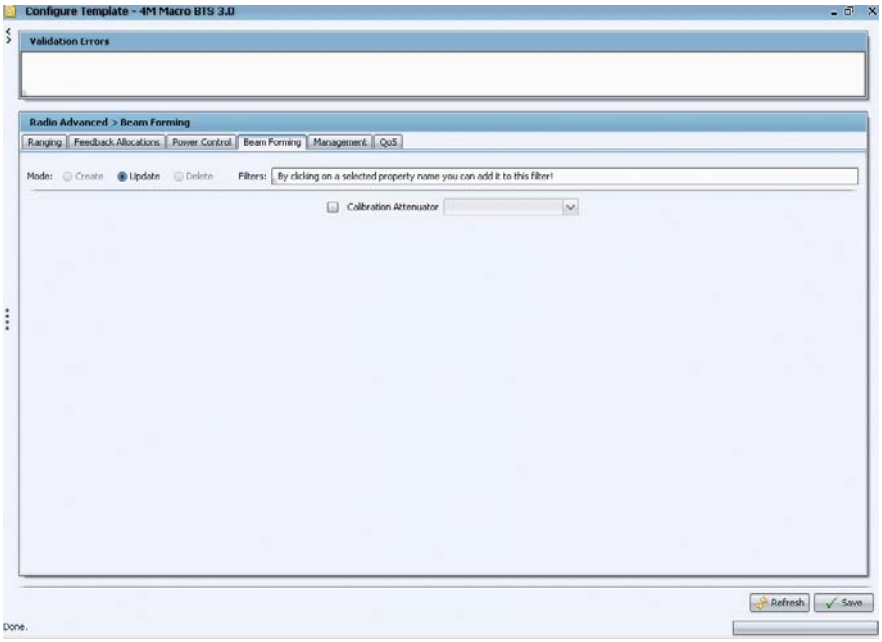


Figure 4-33: The BS Template - Radio Advanced Page - Beam Forming Tab

The Beam Forming parameter is:

Parameter	Description
Calibration Attenuator	Not applicable for 2-channels AU (Macro Outdoor BTS) and Micro Outdoor BTS. Applicable only for Beam Forming DL Diversity Mode. The calibration attenuation used to help mitigate potential out of band interference to beam forming calibration caused by other base stations. The options are No Attenuation Used, Low Attenuation, High Attenuation. The default is No Attenuation Used (the default in the device is Low Attenuation).

4.5.2.5 Management Tab

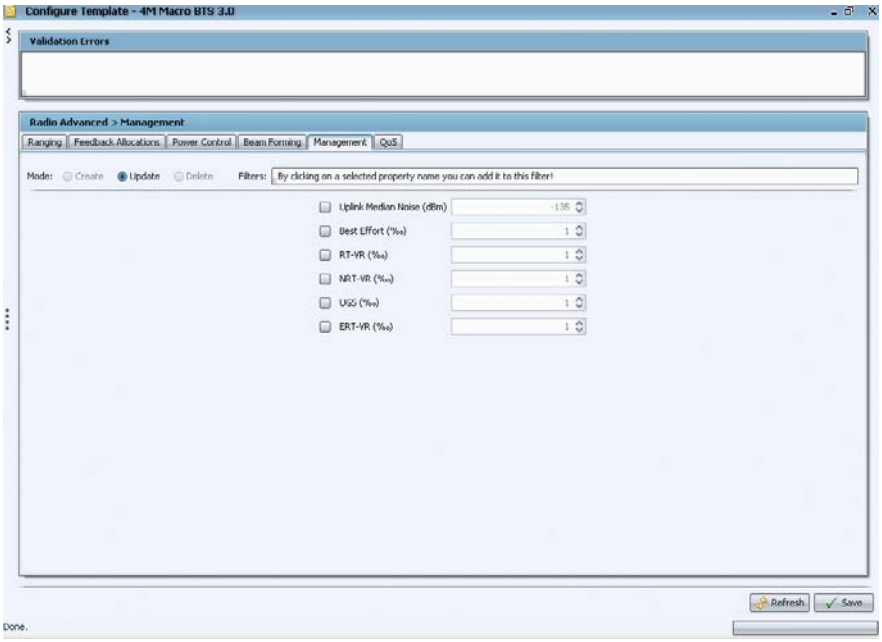


Figure 4-34: The BS Template - Radio Advanced Page - Management Tab

The Management parameters are:

Parameter	Description
Uplink Median Noise	The uplink median noise level represents the median value of the noise floor histogram. If the uplink median noise level exceeds this value, an excessive uplink median noise alarm will be generated. The range is from -135 to -100 (dBm). In the device, the default value of -124 is set to 3 dB above the default value of the Target NI parameter. In the template manager the default is -135.
Best Effort	The threshold for excessive DL dropped packets ratio (in promils), of DL packets in all Best Effort services, which when exceeded triggers a Best Effort service alarm. The range is from 1 to 1000 (promil). The default is 1 (in the device the default is 1000).
RT-VR	The threshold for excessive DL dropped packets ratio (in promils), of DL packets in all RT-VR services, which when exceeded triggers an RT-VR service alarm. The range is from 1 to 1000 (promil). The default is 1 (in the device the default is 1000).

Parameter	Description
NRT-VR	The threshold for excessive DL dropped packets ratio (in promils), of DL packets in all NRT-VR services, which when exceeded triggers an NRT-VR service alarm. The range is from 1 to 1000 (promil). The default is 1 (in the device the default is 1000).
UGS	The threshold for excessive DL dropped packets ratio (in promils), of DL packets in all UGS services, which when exceeded triggers a UGS service alarm. The range is from 1 to 1000 (promil). The default is 1 (in the device the default is 1000).
ERT-VR	The threshold for excessive DL dropped packets ratio (in promils), of DL packets in all ERT-VR services, which when exceeded triggers an ERT-VR service alarm. The range is from 1 to 1000 (promil). The default is 1 (in the device the default is 1000).

4.5.2.6 QoS Tab

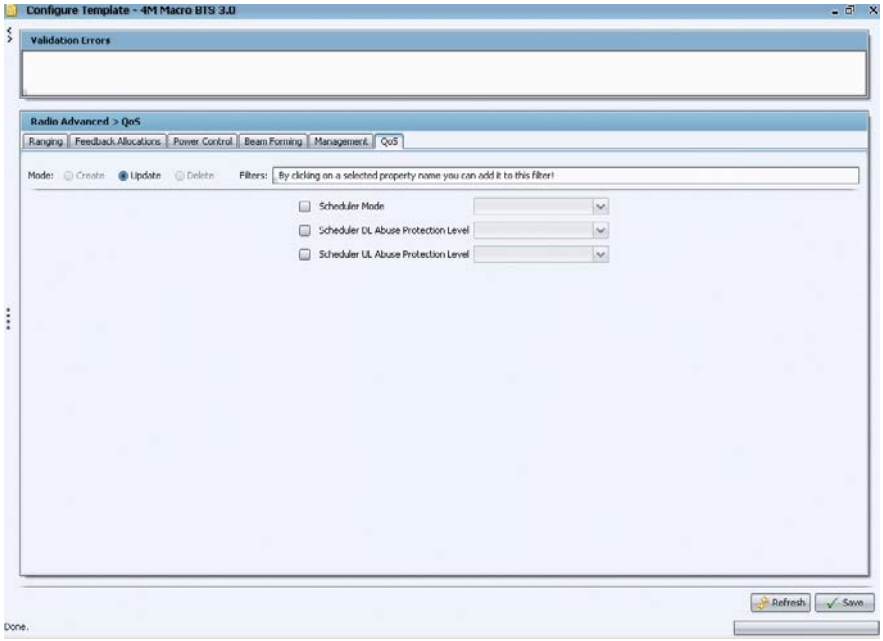


Figure 4-35: The BS Template - Radio Advanced Page - QoS Tab

The QoS parameters are:

Parameter	Description
Scheduler Mode	The basis for allocating excess bandwidth among relevant users: ■ Equal Rate: Throughput Fairness ■ Equal Time: Resource Fairness The selected mode is applicable for both uplink and downlink schedulers. The default is Equal Rate.
Scheduler DL Abuse Protection Level	Applicable only if the selected Scheduler Mode is Equal Rate. None: No Protection Low: Limit the DL resources allocated to MSs with very low DL transmission Rate. Medium: Limit the DL resources allocated to MSs with low and very low DL transmission Rate. The default is None.
Scheduler UL Abuse Protection Level	Applicable only if the selected Scheduler Mode is Equal Rate. None: No Protection Low: Limit the UL resources allocated to MSs with very low UL transmission Rate. Medium: Limit the UL resources allocated to MSs with low and very low UL transmission Rate. The default is None.

4.5.3 R6/R8 Bearer Interface

The R6/R8 Bearer Interface page is not applicable for Add Rows to Tables templates.

The R6/R8 Bearer Interface page comprises the following tabs:

- "Bearer Tab
- "ASNGW Pools Tab
- "Authentication Tab
- "Control Traffic QoS Rules
- "Bearer Traffic QoS Rules Tab

4.5.3.1 Bearer Tab

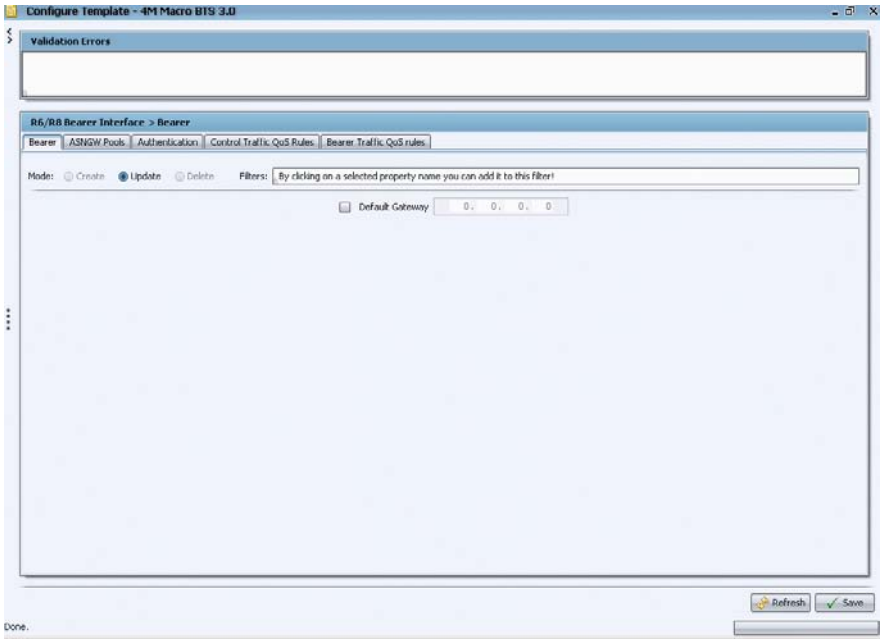


Figure 4-36: The BS Template - R6/R8 Bearer Interface Page - Bearer Tab

The Bearer parameter is:

Parameter	Description
Default Gateway	The IP address of the default gateway of the bearer interface of the BS. Must be in the same subnet with the BS bearer IP Address.

4.5.3.2 ASNGW Pools Tab

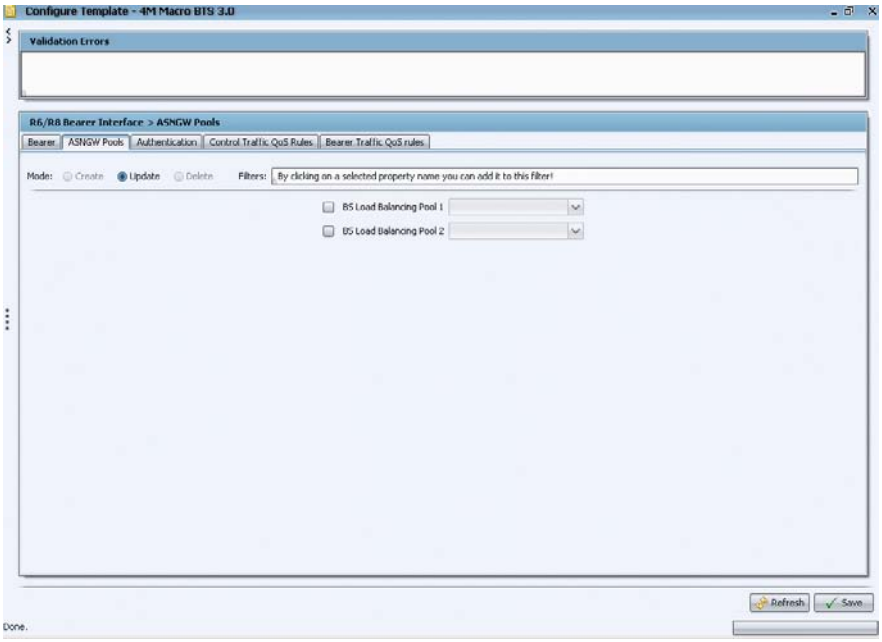


Figure 4-37: The BS Template - R6/R8 Bearer Interface Page - ASNGW Pools Tab

The ASNGW Pools parameters are:

Parameter	Description
BS Load Balancing Pool 1	Enable/Disable the use of the Primary Pool. The default is Enable.
BS Load Balancing Pool 2	Enable/Disable the use of the Secondary Pool. The default is Disable. Pool 2 can be enabled only if Pool 1 is enabled and includes at least one entry.

4.5.3.3 Authentication Tab

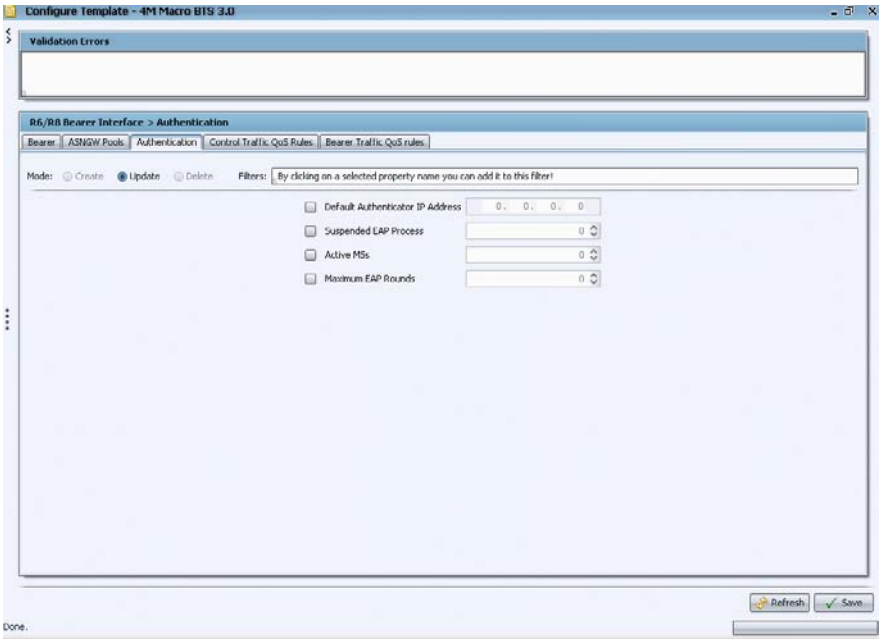


Figure 4-38: The BS Template - R6/R8 Bearer Interface Page - Authentication Tab

The Authentication parameters are:

Parameter	Description
Default Authenticator IP Address	The IP address of the default authenticator ASN GW. In Distributed ASN-GW Topology this is typically the IP address of the NPU's Bearer interface.
Suspended EAP Process	Suspended EAP authentication process threshold. It is used to set an alarm. The range is 0-10000. The default is 0 (the default in the device is 10000). Note: The relevant alarm is not supported in current release.
Active MSs	The threshold for the number of MSs in active operation state (not Idle) served by the BS. Exceeding this threshold sets the alarm "Excessive MS number". The range is 0-1024. When set to 0, the alarm is disabled. The default is 0 (the default in the device is 1024.

Parameter	Description
Maximum EAP Rounds	The threshold for the number of EAP rounds in one direction in the same EAP session. When this threshold is exceeded, alarm is set. This threshold may be used to protect the system from hazard EAP sessions with extreme number of messaging round trips. The range is 0-100. When set to 0, the alarm is disabled. The default is 0 (the default in the device is 100. Note: The relevant alarm is not supported in current release.

4.5.3.4 Control Traffic QoS Rules

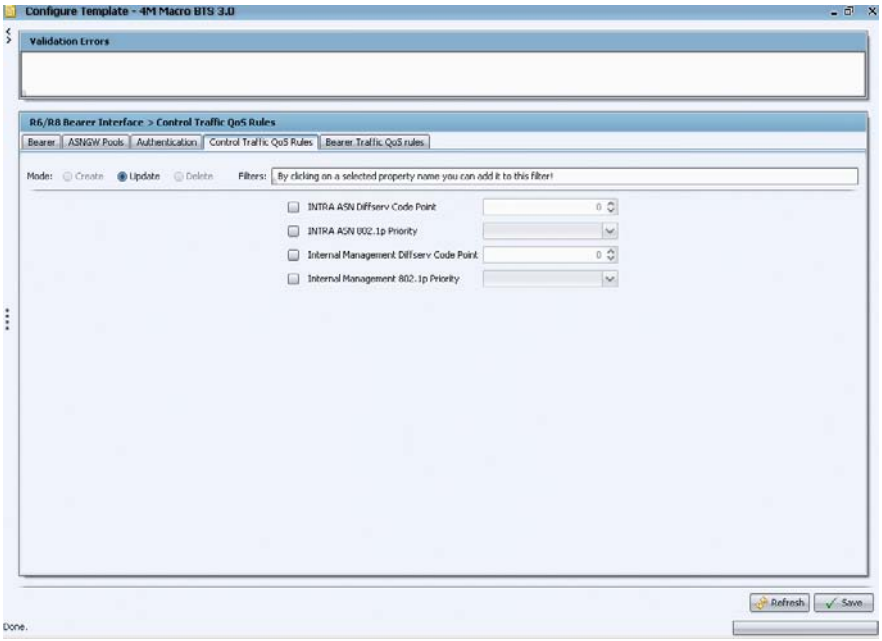


Figure 4-39: The BS Template - R6/R8 Bearer Interface Page - Control Traffic QoS Rules Tab

The Control Traffic QoS Rules parameters are:

Parameter	Description
Intra ASN Diffserv Code Point	DSCP priority value to be used for marking of intra-ASN (R8/R6) traffic. The range is 0-63. The default is 0.
Intra ASN 802.1p Priority	802.1p priority value to be used for marking of intra-ASN (R8/R6) traffic. The range is 0-7. The default is 0.
Internal Management Diffserv Code Point	DSCP priority value to be used for marking of intra-ASN (R8/R6) traffic. The range is 0-63. The default is 0.

Parameter	Description
Internal Management 802.1p Priority	802.1p priority value to be used for marking of intra-ASN (R8/R6) traffic. The range is 0-7. The default is 0.

4.5.3.5 Bearer Traffic QoS Rules Tab

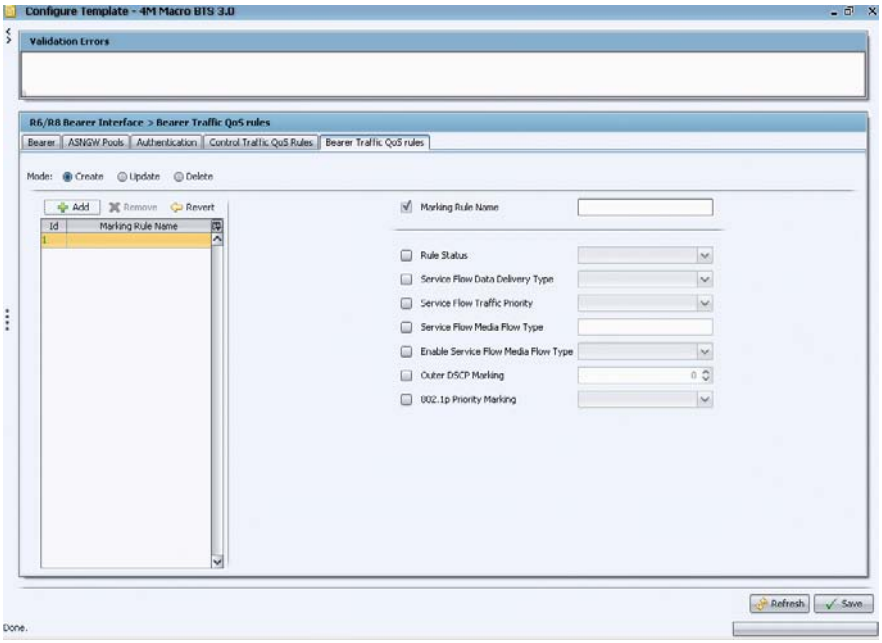


Figure 4-40: The BS Template - R6/R8 Bearer Interface Page - Bearer Traffic QoS Rules Tab (Create Mode)

The Bearer Traffic QoS Rules table includes the following parameters for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
Marking Rule Name	The name (alias) of the Marking Rule.

The Bearer Traffic QoS Rules Row Editor includes the following parameters:

Parameter	Description
Marking Rule Name	The name (alias) of the Marking Rule. A string of 1 to 30 characters. Must be unique in the device.
Rule Status	The status of the rule (Enable or Disable). The default is Disable (the default in the device is Enable.

Parameter	Description
Service Flow Data Delivery Type	The Service Flow Type for data delivery services: uGS, BE, eRTVR, or ANY. The default is uGS (the default in the device is ANY.
Service Flow Traffic Priority	The priority of Service Flow traffic. 0-7 or ANY. The default is 0 (the default in the device is ANY.
Service Flow Media Flow Type	The Service Flow Media Flow Type, as defined in ASN-GW or AAA server.
Enable Service Flow Media Flow Type	Indicates whether the condition for Service Flow Media Flow Type is enabled or disabled. If enabled, the Service Flow Media Flow Type will be considered. when looking for a match. The default is true (the default in the device is false).
Outer DSCP Marking	The DSCP value to be used for marking the outer IP header (IP/GRE). The range is 0-63. The default is 0.
802.1p Priority Marking	The 802.1p priority to be used for marking traffic. The range is 0-7. The default is 0.

4.6 Management Template

The Management Template comprises the following pages:

- "SNMP Managers Page
- "Performance Page
- "Logging Page (not applicable for Micro BTS)

4.6.1 SNMP Managers Page

The SNMP Managers page comprises the following tabs:

- "SNMP Managers Tab
- "SNMP Trap Managers Tab

4.6.1.1 SNMP Managers Tab

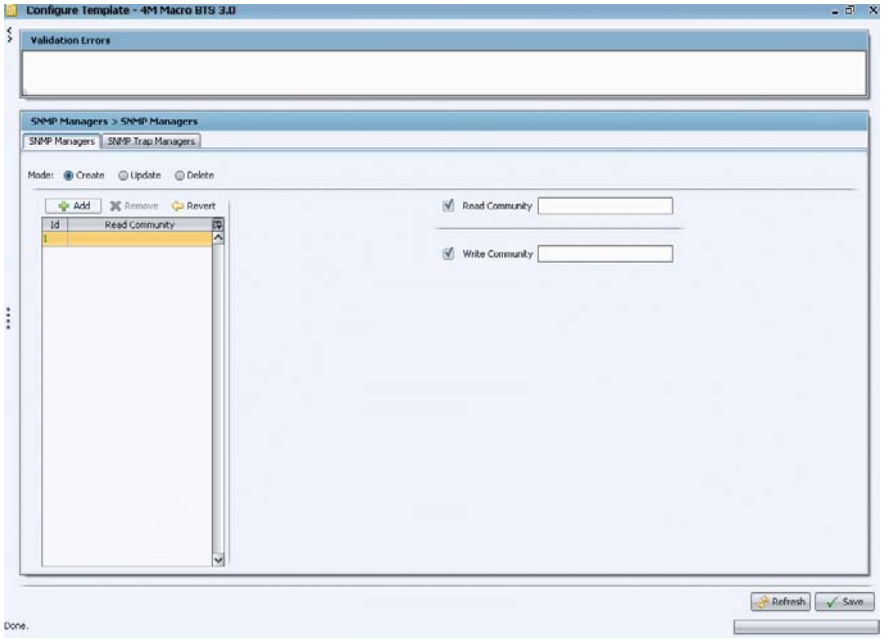


Figure 4-41: The Management Template - SNMP Managers Page - SNMP Managers Tab

The SNMP Managers table includes the following parameter for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
Read Community	The SNMP Read Community string allowing execution of SNMP Get operations. A string of 1 to 10 printable characters, case-sensitive. The default is the device is public.

The SNMP Manager Row Editor includes the following parameters:

Parameter	Description
Read Community	The SNMP Read Community string allowing execution of SNMP Get operations. A string of up to 10 printable characters, case-sensitive. The default is public.
Write Community	The SNMP Write Community string allowing execution of SNMP Set and Get operations. A string of 1 to 10 printable characters, case-sensitive. The default in the device is private.

NOTE

The Communities are mandatory and both must be defined (other than null).
Duplication of Communities pairs is not allowed (each pair must be unique).

IMPORTANT

If you delete all SNMP Managers you will loose the ability to manage the site using SNMP.

4.6.1.2 SNMP Trap Managers Tab

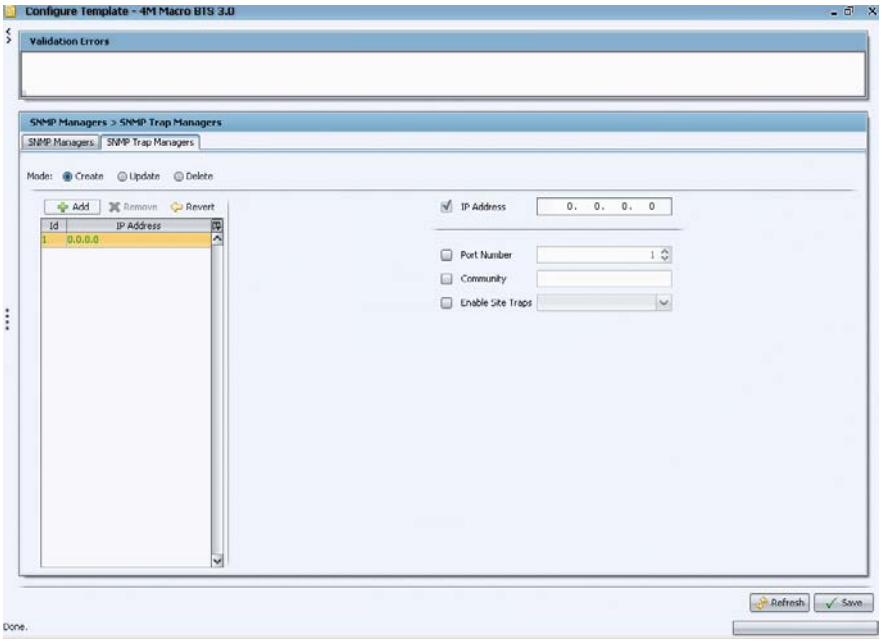


Figure 4-42: The Management Template - SNMP Managers Page - SNMP Trap Managers Tab

The SNMP Trap Managers table includes the following parameter for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
IP Address	The IP address of the SNMP Trap Manager.

The SNMP Trap Manager Row Editor includes the following parameters:

Parameter	Description
IP Address	The IP address of the SNMP Trap Manager. The default is 0.0.0.0 which is not a valid value (the default in the device is 192.168.0.1).
Port Number	The port number on which the Trap Manager will listen for messages from the Agent. The range is from 1 to 65535. The port on which the management system listens for traps is 162. The default is 0 which is not a valid value.
Community	The name of the SNMP Read Community used by the Trap Manager. Traps are sent toward those Managers for which this parameter is configured. A string of 1 to 10 printable characters, case-sensitive. The default in the device is public.

Parameter	Description
Enable Site Traps	Indicates whether the sending of traps to the management station is enabled or disabled. The default is enable.

4.6.2 Performance Page

The Performance page comprises the Connectivity/ASN-GW Counters and BS Counters tabs.

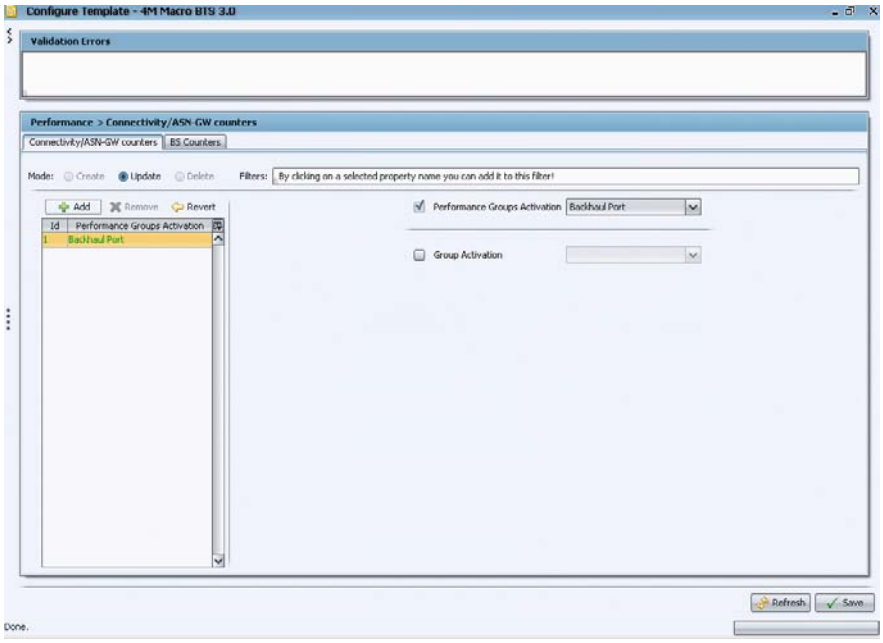


Figure 4-43: The Management Template - Performance Page - Connectivity/ASN-GW Counters Tab

Only the Update Mode is applicable for the Counters tables. The Counters tables includes the following parameter for each row:

Parameter	Description
Id	The automatically generated index number of the entry.
Performance Group Activation	The Counters Group to be activated/deactivated, according to selected group in the Row Editor.

The Counters Row Editors includes the following parameters:

Parameter	Description
Performance Group Activation	The Counters Group to be activated/deactivated.
Group Activation	Defines whether collection of performance counters for the group will be activated/deactivated.

4.6.3 Logging Page (not applicable for Micro BTS)

The Logging page comprises the following tabs:

- "NPU Logging Tab
- "Log Severity Tab

4.6.3.1 NPU Logging Tab

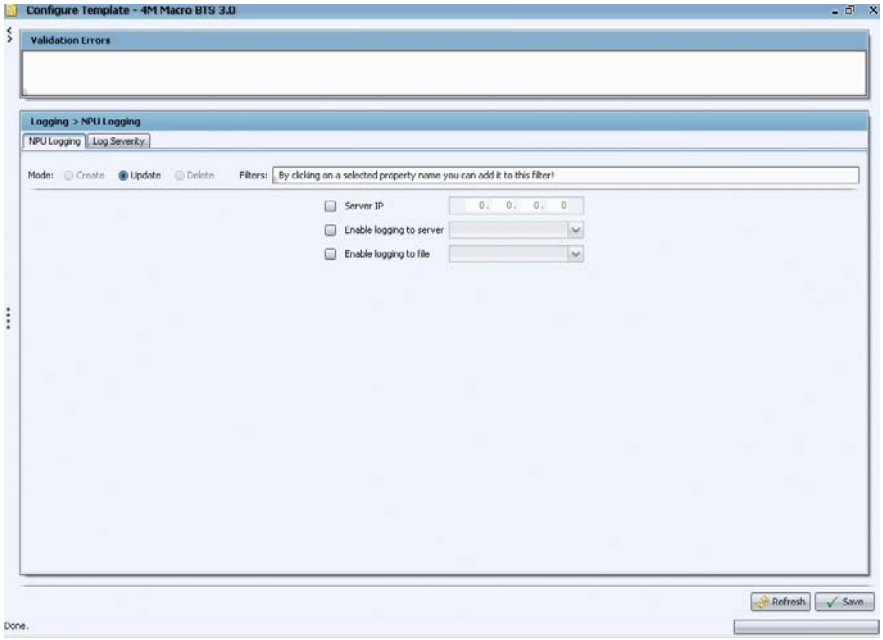


Figure 4-44: The Management Template - Logging Page - NPU Logging Tab

The NPU Logging tab includes the following parameters:

Parameter	Description
Server IP	The server IP address of the server on which logs are to be maintained. If logging to server is enabled, the Server IP cannot be changed. To change the Server IP you need three steps: 1 Disable logging to server in the managed objects. 2 Update the Server IP in the managed objects. 3 Enable logging to server in the managed objects. The default is 0.0.0.0 which is not a valid value (the default in the device is 192.168.0.1).
Enable logging to server	Indicates whether or not logging to the server is enabled. The default is disable.
Enable logging to file	Indicates whether or not logging to file is enabled. The default is disable (the default in the device is enable).

4.6.3.2 Log Severity Tab

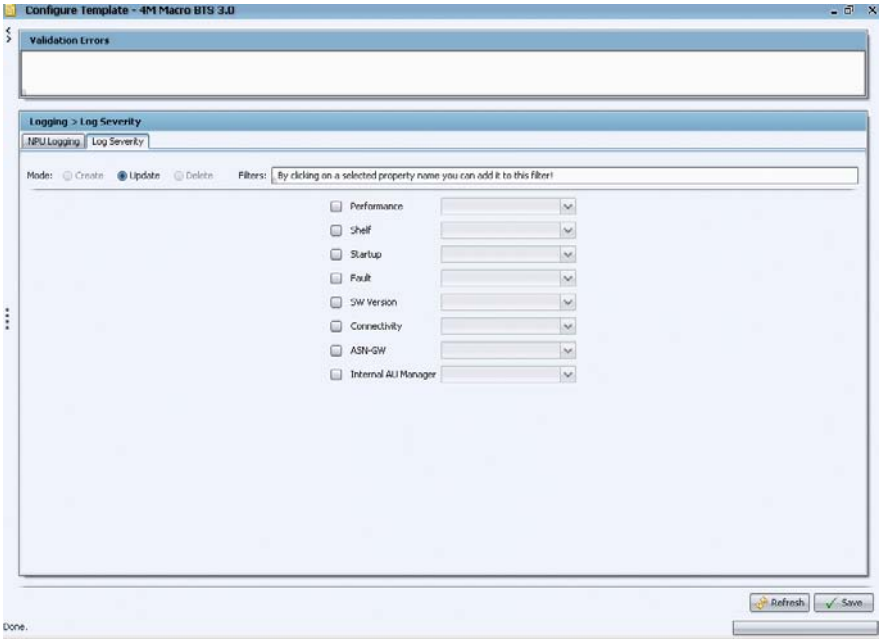


Figure 4-45: The Management Template - Logging Page - Log severity Tab

The Log Severity tab enables setting the minimum severity level that generates a log entry for each of the following types of events:

Parameter	Description
Performance	Performance management procedures.
Shelf	Shelf management procedures.
Startup	System startup procedures.
Fault	Fault management procedures.
SW Version	Software upgrade procedures.
Connectivity	Connectivity procedures.
ASN-GW	ASN-GW procedures.
Internal AU Manager	Internal processes used for managing the AUs (not applicable for Mini Centralized ASN-GW).

The available minimum severity options are:

- Disable (no logging)
- Emergency
- Alert
- Critical
- Error
- Warning
- Notice
- Informational

The default for all event types is Disable (the default in the device is Error).

Chapter 5

The Duplicate Site Manager

In This Chapter:

- "Twin-Site Creation" on page 99
- "The Twin-Site Creation Wizard" on page 101

5.1 Twin-Site Creation

The Duplicate Site Manager provide the ability to “duplicate” existing site configuration file in order to generate new site(s) file(s).

NOTE

The Duplicate Site Manager can be used to “duplicate” a Macro BTS (Indoor/Outdoor) or a Mini-Centralized ASN-GW configuration. Currently it does not support duplication of a Micro BTS ODU (Micro Outdoor BTS) configuration.

The Twin-Site Creation functionality is based on the following assumptions:

- The customer will use the on-line configuration tool to create at least one site configuration file of each "class".
- Each on-line site configuration file may be used as the basis for the creation of additional sites, which are "almost identical twins" regarding configuration. “Twin" sites are sites for which:
  - All managed Objects, including instances, are the same (e.g. same number and types of AUs, BSs, ODUs, Sectors, Services, VLANs, etc.).
  - All corresponding parameters of each Managed Object instance have the same values, except a limited number of parameters defined to be unique. The management system user has to enter these unique parameters values upon creation of a new Duplicate Site configuration file, using pre-prepared network plan guidelines.

Whenever a need rises to create a new “class” of sites, the user has to create the first-of-a-kind site using on-line configuration tool, and then use the Duplicate Site Manager for duplicating it as needed. Note that any site created by offline duplication may be used as a basis for duplication, without any restriction.

Using Duplicate Site configuration files, the actual creation of a new site requires the following steps:

1. Preparing the required Duplicate Site configuration file for the new site, including definition of its unique parameter such as Site ID.
2. Physical installation of equipment.
3. Local provisioning of minimal connectivity and management access configuration (see “Enabling Discovery” on page 1). This step may be skipped in case the next steps are done locally on-site.

4 Following discovery by the management system, loading the pre-prepared Duplicate Site configuration file to the new site using the Restore Configuration task (see “Restore Configuration Task” on page 300.

5 Site restart.

5.2 The Twin-Site Creation Wizard

This section includes:

- "Introduction"
- "Starting the Twin-Site Creation Wizard"
- "Twin-Site Creation Wizard - Step 1"
- "Twin-Site Creation Wizard - Step 2"
- "Twin-Site Creation Wizard - Step 3"
- "Twin-Site Creation Wizard - Step 3"
- "Twin-Site Creation Wizard - Step 4"

5.2.1 Introduction

Creation of a new "twin-site" configuration done is performed using a step-by-step wizard.

When the twin-site creation process is based on a backup configuration file, the file is not supposed to include the following:

- Parameters having "action" nature
- Parameters having "Read-Only" syntax.
- Tables in which all parameters are of the "action" nature or having "Read-Only" syntax.

Some tables (including their whole content) are not relevant to any off-line-configuration-related activity as a whole - although included in the configuration file. All writable parameters of these tables are set to their default values when creating an off-line file.

All BSs table entries related to neighbors (Neighbors List, Neighbors Triggers, ID-IP Mapping) are deleted. The Exclude IP Address table is also deleted. After loading the Duplicate Site configuration file to the new site the user should

configure them using online configuration and perform the required network update actions.

In the different wizard screen only parameters that are needed for the creation of a new Duplicate Site configuration file are displayed:

- Read-only values of the new site are presented on a light-grey background.
- Read-only reference values of the source site (e.g. source site BS IDs) are presented as grayed-out, on a light-grey background.
- Mandatory fields, into which the user has to enter a new value - have a yellow background.
- Non-mandatory fields, into which the user does not have to enter a new value - have a white background. The user may leave them as are, with the default value (which is an empty string in some of the cases).

After completing configuration of parameters in each step, click **Next** to move to the next screen. In case of consistency check failure - the failed field(s) are marked with a red surrounding rectangle. A consistency failure messages is presented on the upper side of the screen, using scrolling (if necessary) in case of many such failures. You may at any time use the **Back** button to go back to previous screens.

In the last screen, click Finish to end the Duplicate Site configuration file creation. You can view the available Duplicate Site configuration files in the File Manager (see "Duplicate Site File Manager" on page 327). From the File Manager you can also initiate the operation of loading a Duplicate Site configuration file to its target site.

5.2.2 Starting the Twin-Site Creation Wizard

To start the Twin-Site Creation Wizard

1 Select *Configuration Management* > *Duplicate Site* from the Navigation Pane or menu bar. The Duplicate Site Manager window opens.

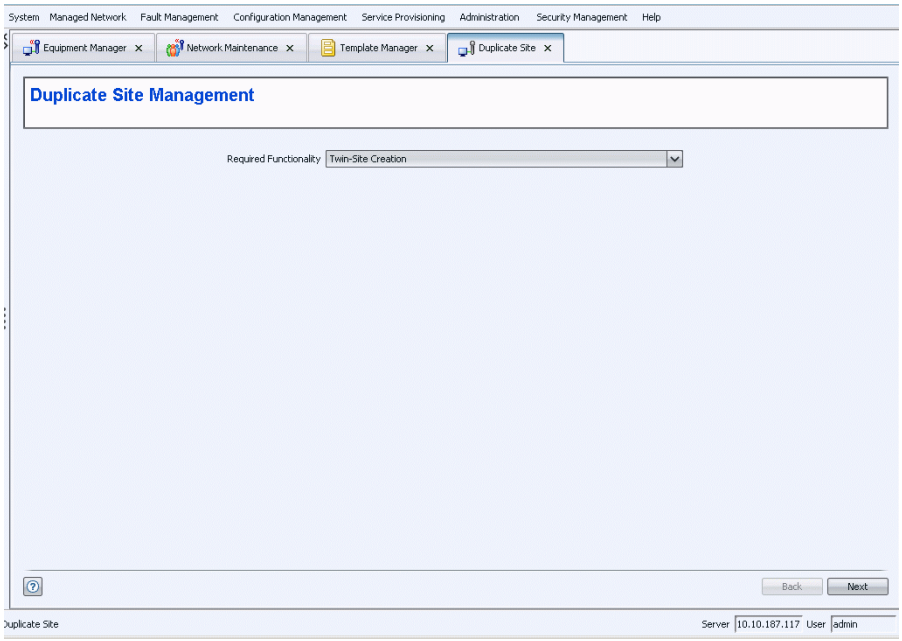


Figure 5-1: Duplicate Site Manager

2 In the Required Functionality field, select Twin-Site Creation (in the current release this is the only option). Click Next to open the first screen of the twin-site creation wizard.

5.2.3 Twin-Site Creation Wizard - Step 1

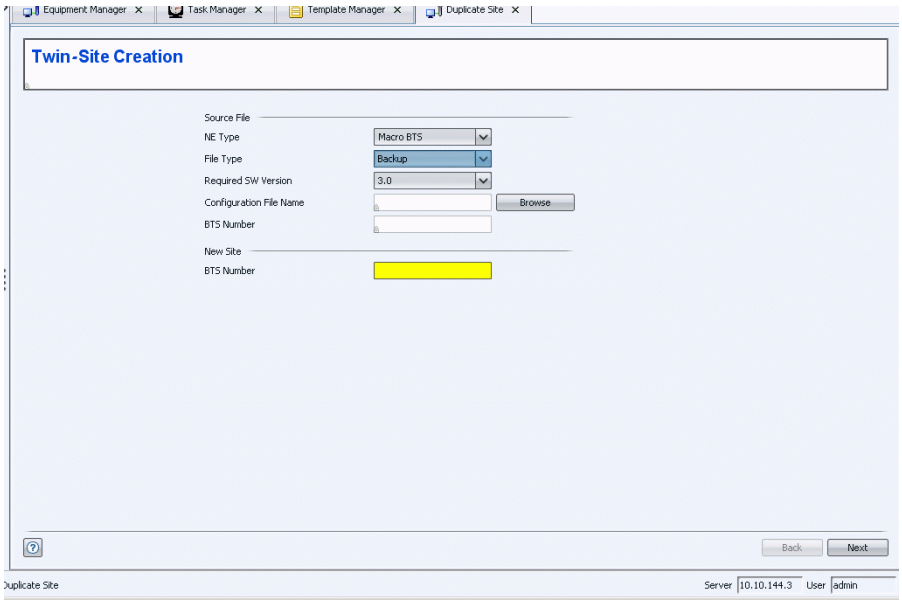


Figure 5-2: Twin-Site Creation Wizard - Step 1

The first screen of the wizard includes the following parameters:

Parameter	Description
Source File	
NE Type	Select the required equipment type: Macro BTS (for Macro Indoor/Outdoor BTS) or MC ASN-GW (Mini Centralized ASN-GW).
File Type	Select the type of the file to be used as a basis for the new Duplicate Site configuration file: Backup file or another Duplicate Site file.
Required SW Version	Select the required SW version of the source equipment.
Configuration File Name	Click on the Browser button to open either the Backup File Selector or Duplicate Site File Selector according to the selected File Type. Only files from devices that match the specified NE Type that used the specified SW Version at the time of file creation will be available for selection.
BTS Number	Read-only. The BTS Number (Site ID) of the source equipment for the selected source file.
New Site	

Parameter	Description
BTS Number	The BTS Number (Site ID) of the new site. The Duplicate Site configuration file can be loaded only to a site with the specified BTS Number (Site ID), which must be unique in the network. In case the user enters an existing BTS Number, the system prompts him to correct the mistake or to confirm the entered number. The later is applicable when preparing a file for an already-discovered site.

Click Next to open the next screen of the wizard.

5.2.4 Twin-Site Creation Wizard - Step 2

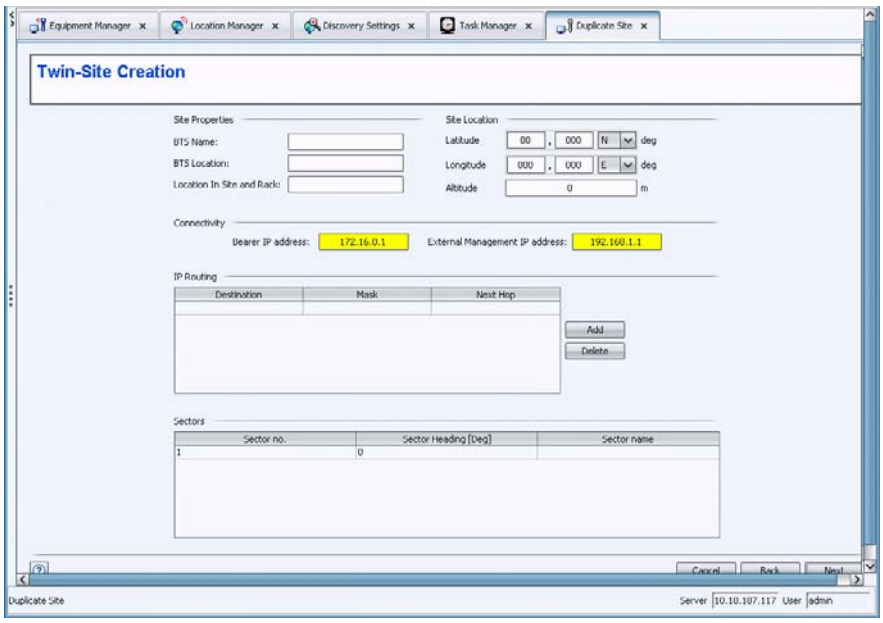


Figure 5-3: Twin-Site Creation Wizard - Step 2

The second screen of the wizard includes the following sections:

- "Site Properties"
- "Site Location"
- "Connectivity"
- "IP Routing"
- "Sectors"

5.2.4.1 Site Properties

Parameter	Description
BTS Name	The name of the BTS. An optional descriptive parameter. A string of up to 32 characters.
BTS Location	The address of the BTS (e.g., 21 Main Street, 2nd Floor). An optional descriptive parameter. A string of up to 70 characters.
Local In Site and Rack	An optional description of the physical location of the BTS shelf in the site/rack. A string of up to 32 characters

5.2.4.2 Site Location

Site Location parameters are not applicable for twin-site creation of a Mini Centralized ASN-GW.

Parameter	Description
Latitude	The latitude of the site. Typically should not be configured as it is received from the GPS receiver. The format is ll.mmm,a: ll.is latitude in degrees (between 00 and 89); mmm is in minutes (between 000 and 999); a - is N (north) or S (south).
Longitude	The longitude of the site. Typically should not be configured as it is received from the GPS receiver. The format is lll.mmm,a: lll.is longitude in degrees (between 000 and 179); mmm is in minutes (between 000 and 999); a - is E (east) or W (west).
Altitude	The altitude in meters of the site. Typically should not be configured as it is received from the GPS receiver. The Altitude is in meters, from -300.0 to 9000.0

5.2.4.3 Connectivity

Parameter	Description
Bearer IP Address	The IP address of the Bearer Interface. Must be unique in the network. The default is 172.16.0.1. Not applicable if ASN Topology is Centralized ASN-GW.
External Management IP Address	The IP address of the External Management Interface. Must be unique in the network. The default is 192.168.1.1. Not applicable (same as Bearer) if NMS Connectivity Mode is Unified.

5.2.4.4 IP Routing

Parameter	Description
Destination	The destination host or network IP address for the route.
Mask	The net mask for the route.
Next Hop	The next hop IP address for the route.

A single empty entry is presented, allowing to define one static route. it is recommended to define the default route in order not to lose connectivity with the device after restoring the file on the device. To add more routes, click on the Add button.

Click on the Delete button to remove a selected entry from the table.

5.2.4.5 Sectors

Sector parameters are not applicable for twin-site creation of a Mini Centralized ASN-GW.

Parameter	Description
Sector no.	Read-only. The sector number.
Sector Heading	The sector heading (the center angle of the sector), in degrees. The range is from 0 to 359.
Sector name	The sector name. A descriptive string of up to 32 printable characters.

Click Next to open the next screen of the wizard.

5.2.5 Twin-Site Creation Wizard - Step 3

This screen is not applicable for twin-site creation of a Mini Centralized ASN-GW.

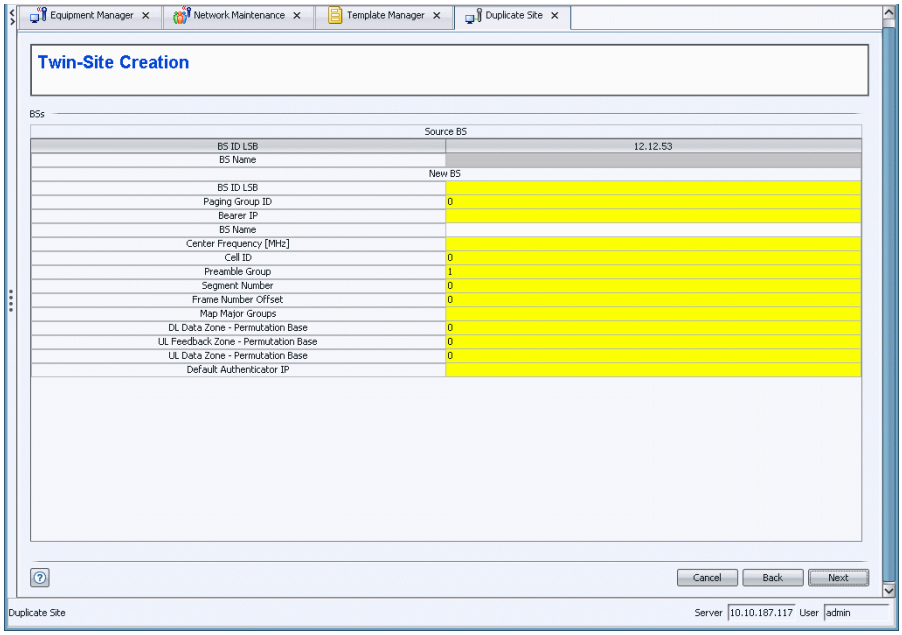


Figure 5-4: Twin-Site Creation Wizard - Step 3

The third screen of the wizard includes the following parameters:

Parameter	Description
Source BS *(up to 6)*	
BS ID LSB	The unique identifier of the BS.
BS Name	The name of the BS.
New BS	
BS ID LSB	The unique identifier of the BS. The management system will reject a BS ID LSB already assigned to another BS in the managed wireless network. The format is x.y.z, where x, y and z are in the range from 0 to 255.
Paging Group ID	The Paging Group ID of the BS. Applicable only if Idle Mode is enabled. The range is from 0 to 65535. Must be set to a value other than 0. Must be unique per BS.
Bearer IP Address	The IP address of the BS's Bearer Interface.
BS Name	The name of the BS. An optional descriptive parameter. A string of up to 32 printable characters.

Parameter	Description
Center Frequency	The center of the frequency band in which the BS will transmit, in MHz. The available values, in accordance with the bands supported by different ODUs, are: ■ 2022.5 to 2217.5 in steps of 0.125 ■ 2302.5 to 2397.5 in steps of 0.125 ■ 2487.5 to 2687.5 in steps of 0.125 ■ 3302.5 to 3397.5 in steps of 0.125 ■ 3402.5 to 3797.5 in steps of 0.125 The available values for Center Frequencies indicated above are for a Bandwidth of 5 MHz. For a different bandwidth, the actually valid values are from f1+1/2BW to f2-1/2BW, where f1 is the lowest frequency of the ODU's radio band, f2 is the highest frequency of the ODU's band, and BW is the configured bandwidth. Note that ODU-2305-2360-000N-36-1x1-Y-0 includes two bands: 2305-2320, 2345-2360 MHz.
Cell ID	The Cell ID (IDCell) used for preamble selection. The range is from 0 to 31.
Preamble Group	The preamble group (1 or 2). A value of 2 is applicable only for the following combinations of Segment Number and Cell ID values: Segment Number=0, Cell ID=0, 3, 6, 9, 12, 15. Segment Number=1, Cell ID=1, 4, 7, 10, 13, 16. Segment Number=2, Cell ID=2, 5, 8, 11, 14, 17
Segment Number	The segment (BS) number in a three sector BS (0-2). This number influences the values available for Preamble Group selection (see above) preamble selection and the configuration of Map (see below).
Frame Number Offset	Controls the offset applied between the internal frame count and the reported frame number. The range is from 0 to 15.

Parameter	Description
Map	A bit map (6 bits) indicating the allocated to the BS for maps transmission. If BW=5 MHz, bits 1, 3 and 5 are not relevant (grayed out). Bits 0, 2 and 4 must be set (checked). Configure 111111. If BW=7/10 MHz with reuse 1, all bits (0 to 5) must be set (checked). Configure 111111. For BW=7/10 MHz with Reuse 3: ■ If Segment Number (see "Radio Basic Page-Air Frame Structure General Tab" on page 250) is 0, then only bits #0 and 1 should be set (checked). Configure 000011. ■ If Segment Number is 1, then only bits #2 and 3 should be set (checked). Configure 001100. ■ If Segment Number is 2, then only bits #4 and 5 should be set (checked). Configure 110000.
DL Data Zone - Permutation Base	The permutation base used in the downlink data zone. The valid range is from 0 to 31.
UL Feedback Zone - Permutation Base	The permutation base used in the uplink feedback zone. The valid range is from 0 to 69.
UK Data Zone - Permutation Base	The permutation base used in the uplink data zone. The valid range is from 0 to 69.
Default Authenticator IP Address	The IP address of the default authenticator ASN GW. Read-only for Transparent connectivity mode.

Click Next to open the next screen of the wizard.

5.2.6 Twin-Site Creation Wizard - Step 4

This screen is not applicable for twin-site creation of a Mini Centralized ASN-GW.

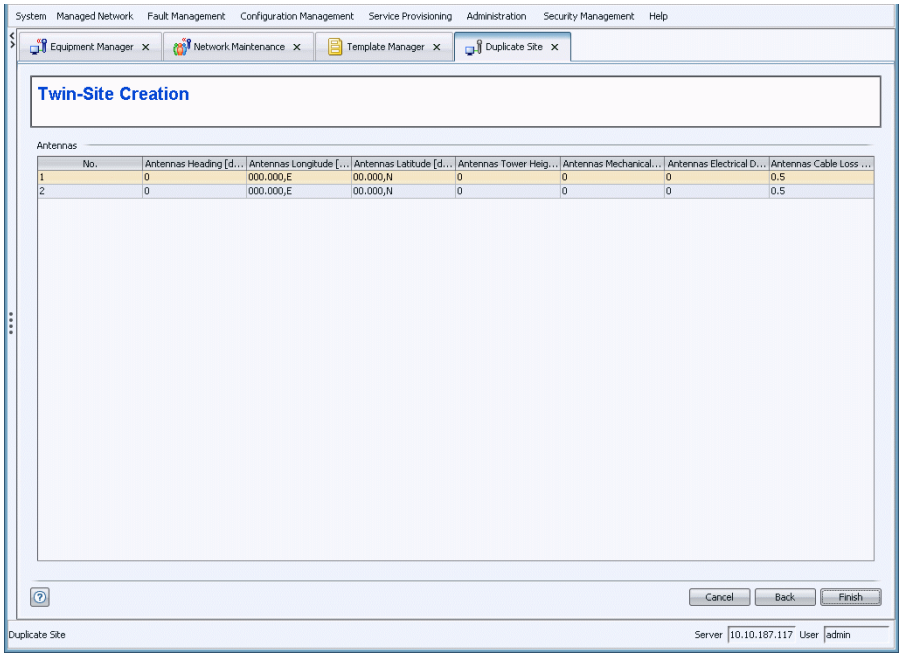


Figure 5-5: Twin-Site Creation Wizard - Step 4

The fourth screen of the wizard includes the following parameters:

Parameter	Description
Antennas *(up to 28)*	
No.	The index number of the antenna.
Heading (deg)	Used only for information (inventory) purposes. The the azimuth angle (in degrees) between the center of the horizontal antenna beamwidth and the true north; counting clockwise.The range is from 0 to 359.
Longitude (deg)	Used only for information (inventory) purposes. The longitude of the antenna. The format is lll.mmm,a: lll.is longitude in degrees (between 000 to 179); mmm is in minutes (between 000 and 999); a - is E (east) or W (west)
Latitude (deg)	Used only for information (inventory) purposes. The latitude of the antenna. The format is ll.mmm,a:ll.is longitude in degrees (between 00 to 89); mmm is in minutes (between 000 and 999); a - is S (south) or N (north)
Tower Height (m)	Used only for information (inventory) purposes. The height of the antenna above the ground in meters. The range is from 0 to 500.
Mechanical Down Tilt (deg)	Used only for information (inventory) purposes. The downwards mechanical tilt of the antenna (in degrees) as opposed to the electrical tilt already integrated in the antenna (and thus taken as reference; instead of the horizontal plane). The range is from -90.0 to 90.0 using 0.1 degree resolution.

Parameter	Description
Electrical Down Tilt (deg)	Used only for information (inventory) purposes. The downwards electrical tilt of the antenna, in degrees. The range is from -90.0 to 90.0 using 0.1 degree resolution.
Cable Loss (dB)	Used only for information (inventory) purposes. The attenuation (in dB) of the cable between the ODU port and antenna port. The range is from 0 to 20 in 0.1 dB steps.

Click Next to open the next screen of the wizard.

5.2.7 Twin-Site Creation Wizard - Last Step

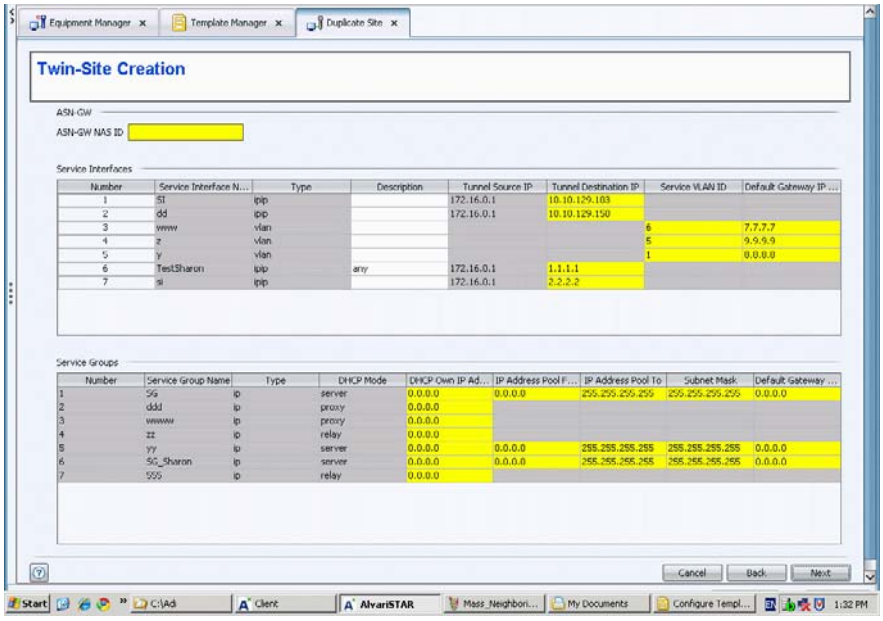


Figure 5-6: Twin-Site Creation Wizard - Last Step

NOTE

If the connectivity mode of the source site is Transparent this screen is not applicable.

The last configuration screen of the wizard includes the following parameters:

Parameter	Description
ASN-GW	
ASN-GW NAS ID	The unique identifier of the ASN-GW NAS. Sent in Access Request message only if configured. Should be in FQDN format. Up to 64 characters.
Service Interfaces *(up to 10)*	

Parameter	Description
Number	An automatically generated number from 1 up to 10.
Service Interface Name	The name (alias) of the service interface. A string of 1 to 15 characters. Must be unique in the device.
Type	The type of service interface: IP-in-IP, or VLAN,.
Description	A brief description of the service interface. A string of up to 70 characters.
Tunnel Source IP	Applicable only for IP-in-IP service interface. The source IP address that indicates the point of origin of the tunnel for the service interface. Set to the value of the Bearer Interface IP Address and cannot be modified.
Tunnel Destination IP	Applicable only for IP-in-IP service interface. The destination IP address that indicates the point of termination of the tunnel for the service interface.
Service VLAN ID	Applicable only for VLAN service interfaces. The Service Interface VLAN ID parameter. The range is 1-9, 11- to 4094. A Service Interface VLAN ID must not conflict with other instances of Service Interface VLAN ID and VLAN IDs of Bearer, Local-Management and External-Management interfaces. It must also not conflict with CVID of any transparent MS.
Default Gateway IP Address	Applicable only for VLAN service interfaces. The IP Address of the Default Gateway. Must be unique among all the Host Interfaces IPs (Bearer, Local-Management, Internal-Management, External-Management) and existing instances of Service Interface's Tunnel Destination IP Address and Default Gateway IP Address. Must be in the same subnet.with the IP Address of the DHCP server/proxy/relay to be assigned to a service group using this service interface. Subnet mask is taken as default subnet mask i.e 255.255.255.0
Service Groups *(up to 10)*	
Number	An automatically generated number from 1 up to 10.
Service Name	The name (alias) of the service group. A string of 1 to 15 characters. Must be unique in the device.
Type	The Service Group's type: IP (VPWS service groups are not supported by the wizard).

Parameter	Description
DHCP Mode	The DHCP function mode. ■ Server: The ASN-GW function as a DHCP server that allocates an IP address to the MS from the local pool (in the non-HA mode). ■ Relay: The IP address is obtained using an external DHCP server (in the non-HA mode). ■ Proxy: Non-HA mode: In Non-HA mode the DHCP proxy assigns the MS, the IP address that was received from AAA in the MS profile. In HA mode the DHCP proxy assigns to the MS the IP address received in the MS profile or obtains the IP address from HA using the mobile IP
DHCP Own IP address	Applicable only for IP Service Groups. The IP address of the DHCP server/relay/proxy. For a service group using a VLAN service interface, should be in same subnet with the Default Gateway configured for the service interface associated with the service group. Subnet mask is taken as the default subnet mask i.e 255.255.255.0.
IP Address Pool From:	Applicable only in Server mode. The first address in the address pool.
IP Address Pool To:	Applicable only in Server mode. The last address in the address pool.
Subnet Mask	Applicable only in Server mode. The subnet mask to be provided by local DHCP Server with IP address. In the Proxy mode, this value is used if appropriate parameter is not received in RADIUS Access-Accept
Default Gateway IP Address	Applicable only in Server mode. IP address of Default Gateway to be provided by local DHCP Server with IP address. In the Proxy mode, this value is used if appropriate parameter is not received in RADIUS Access-Accept.

Click Next to open the next screen. This is an empty screen with Cancel, Back and Finish buttons. Click Finish to finish the wizard. The newly created Duplicate Site configuration file is now available in the File Manager. The first screen of the wizard is displayed, allowing creation of another Duplicate Site configuration file.

Chapter 6

The Offline Configuration Tool

In This Chapter:

- “Introduction” on page 117
- ““Golden” site Configuration Backup File” on page 117
- “Excel File” on page 118
- “Using the Offline Configuration Tool” on page 120

6.1 Introduction

NOTE

The Offline Configuration Tool is a licensed feature.

Operators are faced with the need for quick and efficient deployment of a large number of new sites once the operation goes into its commercial phase. As many of the installations in the same coverage area share most of the configuration parameters, all the common configuration parameters can be copied from one site to all others. However, some configuration parameters must be configured per site.

The Offline Configuration Tool offers a simple process for creating multiple site configuration files.

The Offline Configuration Tool is based on the following pre-prepared inputs:

A A “Golden” site configuration backup file

B An Excel file with specific configuration details for new sites

For each site whose specific configuration details are provided in the Excel file, the Offline Configuration Tool will generate a validated and signed XML configuration file to be used during installation.

6.2 “Golden” Site Configuration Backup File

For each site type, a “golden” site to be used as the basis (template) for creating configuration files for other sites should be created. Site type is defined by the main properties that will be shared by all sites created using it as a basis such as frequency, number and configuration of sectors and ASN Topology.

NOTE

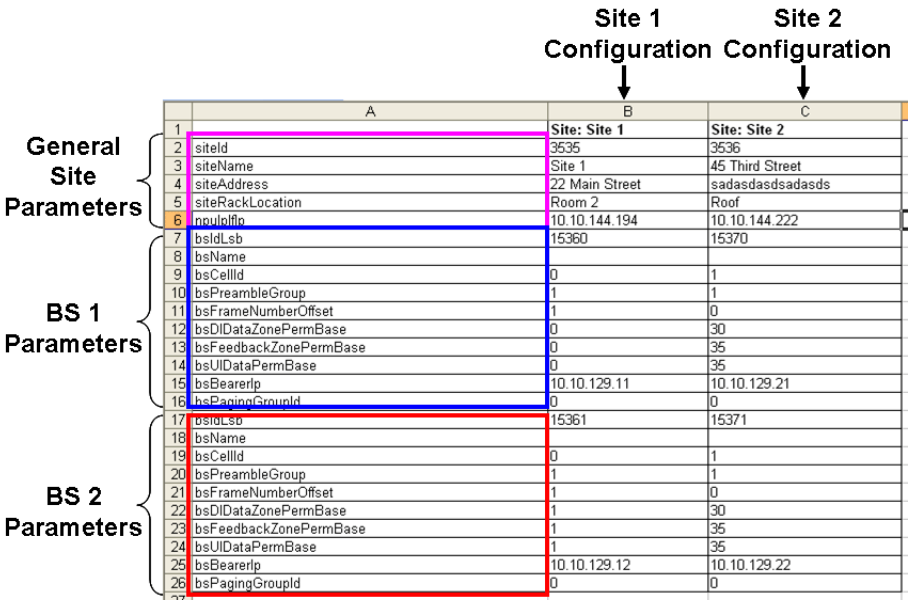
In the current release only Centralized ASN-GW ASN Topology is supported by the Offline Configuration Tool.

“Golden” site configuration should be valid and "optimal" since it will be copied to multiple sites.

A backup file of the “golden” site should be prepared. The XML backup file will be used as an input for the Offline Configuration Tool.

6.3 Excel File

An Excel file that includes specific configuration details for each of the new sites should be pre-prepared.



	A	B	C
1		**Site: Site 1**	**Site: Site 2**
2	siteId	3535	3536
3	siteName	Site 1	45 Third Street
4	siteAddress	22 Main Street	sadasdasdsadasds
5	siteRackLocation	Room 2	Roof
6	npuIpIfIp	10.10.144.194	10.10.144.222
7	bsIdLsb	15360	15370
8	bsName		
9	bsCellId	0	1
10	bsPreambleGroup	1	1
11	bsFrameNumberOffset	1	0
12	bsDlDataZonePermBase	0	30
13	bsFeedbackZonePermBase	0	35
14	bsUlDataPermBase	0	35
15	bsBearerIp	10.10.129.11	10.10.129.21
16	bsPagingGroupId	0	0
17	bsIdLsb	15361	15371
18	bsName		
19	bsCellId	0	1
20	bsPreambleGroup	1	1
21	bsFrameNumberOffset	1	0
22	bsDlDataZonePermBase	1	30
23	bsFeedbackZonePermBase	1	35
24	bsUlDataPermBase	1	35
25	bsBearerIp	10.10.129.12	10.10.129.22
26	bsPagingGroupId	0	0

Figure 6-1: Excel File Example (Configuration with 2 BSs, 2 New Sites

For each site the file contains general site parameters and BS parameters for each BS. The BS parameter section may be repeated as needed according to the number of BSs.

NOTE

In the current release configurations with up to 3 BSs are supported by the Offline Configuration Tool.

The site configuration will use the order of BSs as they appear in the excel file as the order of BSs in the sector association table. The same number of BSs must be configured for all sites in the file.

Specific configuration parameters should be defined according to the following rules:

Parameter Name in File	Description
General Site Parameters	
siteId	Site ID (BTS Number). The ID number of the device that is used by the management system as identifier of the device. Must be unique in the managed network. The range is from 1 to 999999.
siteName	Site Name (BTS Name). The name of the device. An optional descriptive parameter. A string of up to 32 characters. Recommended to be unique across the managed network.
siteAddress	Site Address (BTS Address). The location of the device. An optional descriptive parameter. A string of up to 70 characters.
siteRackLocation	Site Rack Location (Location in Site and Rack). An optional description of the physical location of the device in the site/rack. A string of up to 32 characters.
npuIpIfIp	The Source IP Address of the External Management Interface. Must be unique in the managed network. Should be in the same subnet as npuIpIfIp (External Management IP Address) in the backup file (External Management Default Gateway and Subnet Mask are copied from the backup file).
BS Parameters (per BS)	
bsIdLsb	BS ID LSB. The unique identifier of the BS, in decimal format. Must be unique in the radio access network. A number in the range from 1 to 16,777,215 (a 24-bit value that in the management system is represented as A.B.C where A, B, C are from 0 to 255).
bsName	BS Name. The name of the BS. An optional descriptive parameter. A string of up to 32 printable characters. Recommended to be unique across the managed network.
bsCellId	BS Cell ID. The Cell ID (IDCell) used for preamble selection. The range is from 0 to 31. Value should be set according to Radio Network Plan.
bsPreambleGroup	BS Preamble Group. The preamble group (1 or 2). Value should be set according to Radio Network Plan.
bsFrameNumberOffset	BS Frame Number Offset. Controls the offset applied between the internal frame count and the reported frame number. In devices running SW version 2.5 the range is from 0 to 15. In devices running SW version 3.0 and higher the available options are 0 (Zero) and 1 (Random). If Random is selected, the AU will choose a random number between 0 to 15. Value should be set according to Radio Network Plan.
bsDlDataZonePermBase	Downlink Data Zone Permutation Base. The permutation base used in the downlink data zone. The range is from 0 to 31. Value should be set according to Radio Network Plan.
bsFeedbackZonePermBase	Uplink Feedback Zone Permutation Base. The permutation base used in the uplink feedback zone. The range is from 0 to 69. Value should be set according to Radio Network Plan.

Parameter Name in File	Description
bsUlDataPermBase	Uplink Data Zone Permutation Base. The permutation base used in the uplink data zone. The range is from 0 to 69. Value should be set according to Radio Network Plan.
bsBearerIp	BS Bearer IP Address. The IP address of the bearer interface of the BS. Must be unique in the network.
bsPagingGroupId	The Paging Group ID of the BS. The range is from 0 to 65535. For proper operation all Paging Groups IDs in the radio network should be set either to 0 (Idle Mode disabled) or to unique numbers (different Paging Group ID for each BS).

NOTE

The content of BS ASN-GW Load Balancing tables and Neighbor BSs List (ID-IP mapping) will not be copied from the “golden” backup file to the offline created files.

6.4 Using the Offline Configuration Tool

6.4.1 Starting the Offline Configuration Tool Wizard

To start the Offline Configuration Tool Wizard

1 Select *Configuration Management* > *Offline Configuration Tool* from the menu bar. The Offline Configuration Tool wizard opens.

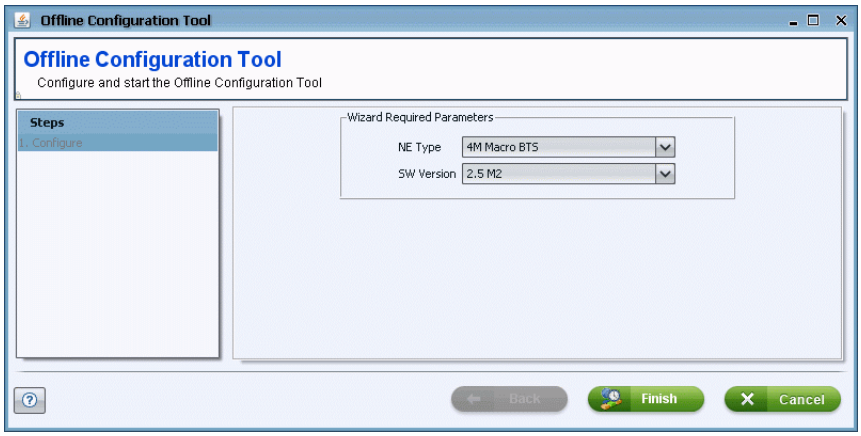


Figure 6-2: Offline Configuration Tool - Starting the Tool

2 Enter the Wizard Required Parameters (NE Type and SW Version) and click **Finish**.

NOTE

In the current release:

Supported products (NE Type): Macro BTS (Indoor), Macro BTS ODU (Macro Outdoor) and Micro BTS ODU (Micro Outdoor).

Supported SW Versions: 2.5M2 (2.5.213), 3.1 (3.0.5), 3.0M (3.0.10).

6.4.2 Offline Configuration Tool Wizard - Import Backup File

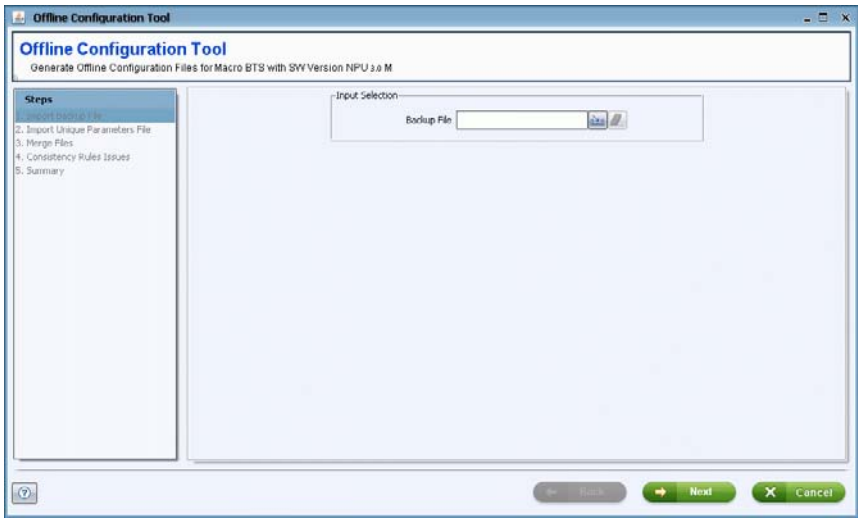


Figure 6-3: Offline Configuration Tool Wizard - Import Backup File

1 Use the **Select File** button to open the backup file selection window. Only files whose NE Type and SW Version match the selected Wizard Required Parameters will be displayed. Select the backup file to be used as the template ("golden") file by the tool.

2 Click **Next**. If the selected file cannot be used as a "golden" file (e.g. the configured ASN Topology is Distributed ASN-GW which is not supported in the current release) an error message will be displayed.

Figure 6-4: Offline Configuration Tool Wizard - ASN Topology Mismatch Message

The next step will become available only if a usable file is selected.

6.4.3 Offline Configuration Tool Wizard - Import Unique Parameters File

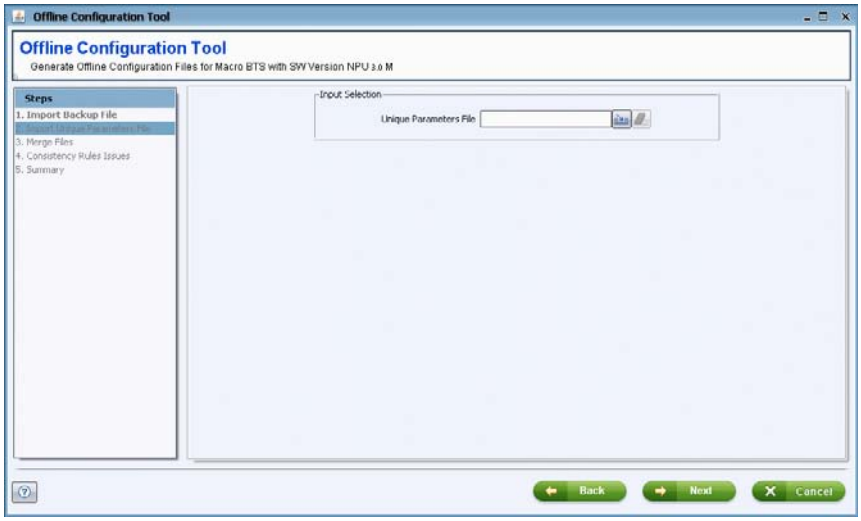


Figure 6-5: Offline Configuration Tool Wizard - Import Unique Parameters File

1. Use the **Select File** button to open the **Open** window, allowing you to browse to the location of the pre-prepared Excel file. Select the required Excel file and click **Open**.
2. Click **Next**. If the number of BSs defined for each site in the Excel file does not match the number of BSs in the selected backup file, an error message indicating the mismatch will be displayed.

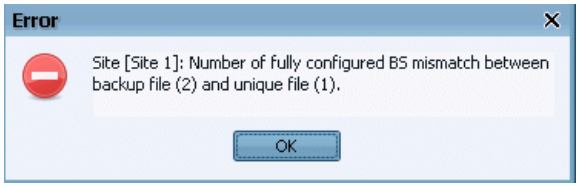


Figure 6-6: Offline Configuration Tool Wizard - Number of BSs Mismatch Message

3 If there are any detectable configuration errors in the file (such as if a parameter that should be unique appears more than once or a non-valid value) an Invalid Unique Parameters window will be displayed, indicating the detected errors.

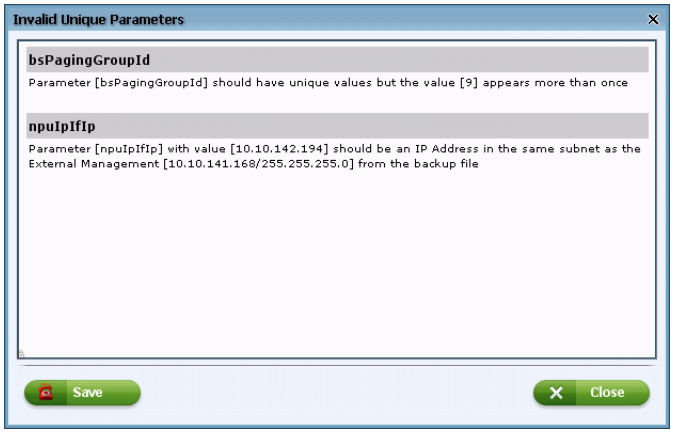

Invalid Unique Parameters
bsPagingGroupId
Parameter [bsPagingGroupId] should have unique values but the value [9] appears more than once
npuIpIfIp
Parameter [npuIpIfIp] with value [10.10.142.194] should be an IP Address in the same subnet as the External Management [10.10.141.168/255.255.255.0] from the backup file
Save
Close

Figure 6-7: Offline Configuration Tool Wizard - Invalid Unique Parameters Message

The next step will become available only if a usable Excel file is selected.

6.4.4 Offline Configuration Tool Wizard - Merge File

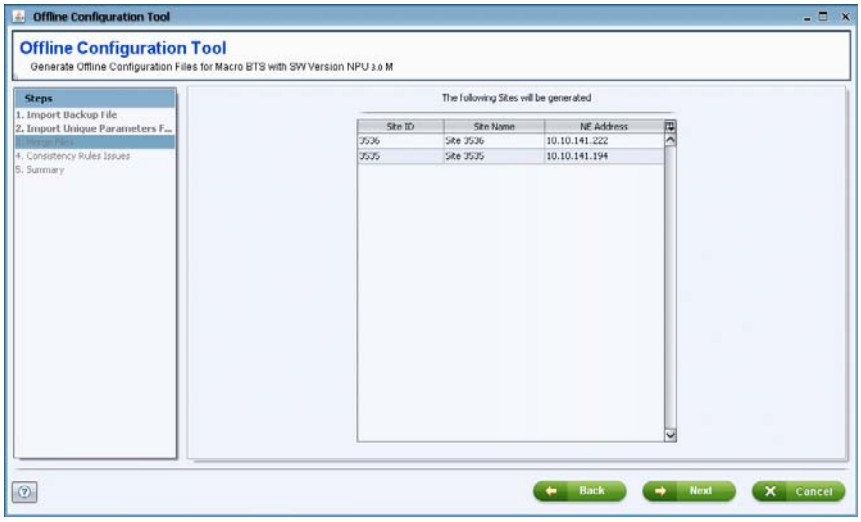


Figure 6-8: Offline Configuration Tool Wizard - Merge File

A table displaying the main identification parameters of the new sites (Site ID, Site Name and NE External Management IP Address) will be displayed. Click **Next** to generate the configuration files for the listed sites. If there are any consistency problems a Consistency Rules Issues window will open, indicating the detected problems.

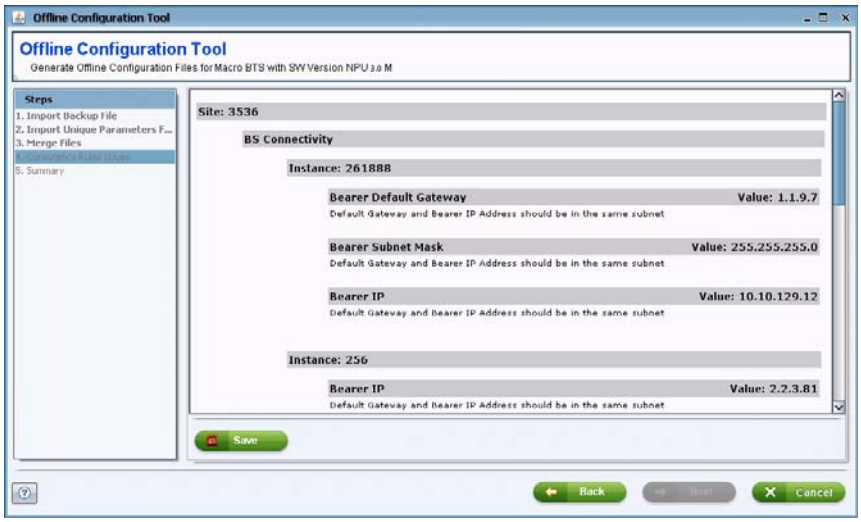

Offline Configuration Tool
Offline Configuration Tool
Generate Offline Configuration Files for Macro BTS with SW Version NPU 3.0 M
Steps
1. Import Backup File
2. Import Unique Parameters F...
3. Merge Files
4. Consistency Rules Issues
5. Summary
Site: 3536
BS Connectivity
Instance: 261888
Bearer Default Gateway
Value: 1.1.9.7
Default Gateway and Bearer IP Address should be in the same subnet
Bearer Subnet Mask
Value: 255.255.255.0
Default Gateway and Bearer IP Address should be in the same subnet
Bearer IP
Value: 10.10.129.12
Default Gateway and Bearer IP Address should be in the same subnet
Instance: 256
Bearer IP
Value: 2.2.3.81
Default Gateway and Bearer IP Address should be in the same subnet
Save
Back
Cancel

Figure 6-9: Offline Configuration Tool Wizard - Consistency Rules Issues

New configuration files can be generated only if there are no consistency rules issues for all sites defined in the Excel file.

6.4.5 Offline Configuration Tool Wizard - Summary

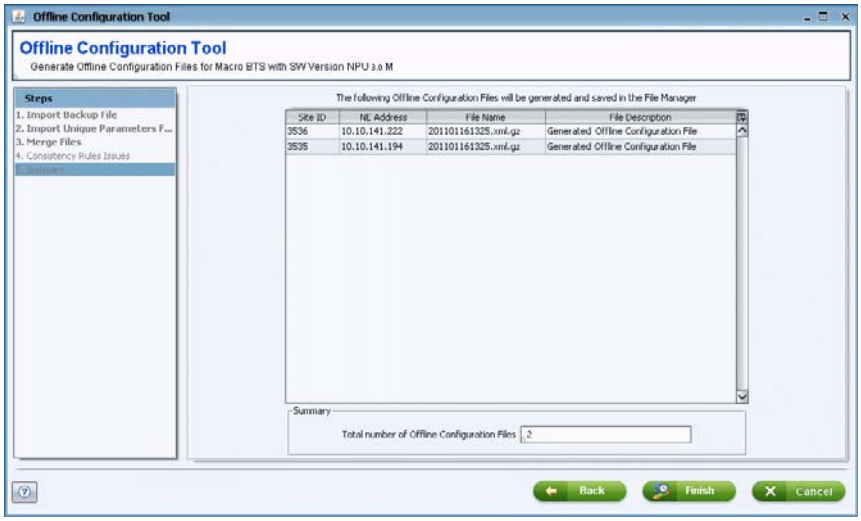


Figure 6-10: Offline Configuration Tool Wizard - Summary

If there were no consistency rules issues, all the required configuration files can be generated. The Summary window displays the main details of the files that will be generated. Click **Finish** to generate the files and save them in the File Manager as Offline Configuration (Offline Cfg) files.

Chapter 7

Managing a Single Device

NOTE

This Chapter describes the Device Manager for the BTS equipment (Indoor and Outdoor) and for the Mini-Centralized ASN-GW. Appropriate note will indicate pages or parameters that are applicable not applicable for all device types.

In This Chapter:

- "Using the Device Manager" on page 128
- "Introduction to Device Management" on page 132
- "Equipment View Page for Macro BTS Equipment" on page 134
- "Site Page" on page 140
- "Connectivity" on page 147
- "SNMP Managers Tab" on page 168
- "Equipment" on page 181
- "ASN-GW" on page 211
- "BS" on page 243
- "Site Sector" on page 278

7.1 Using the Device Manager

- "Introduction to the Device Manager" on page 128
- "The Device Manager Components" on page 129
- "Common Control Buttons" on page 130
- "Working with Configuration Tables" on page 130

7.1.1 Introduction to the Device Manager

The Device Manager enables managing a single device and its components (if applicable).

To open the Device Manager for a selected device:

In the Equipment Manager, double-click on the selected entity, or select it and click on the **Configure** button, or right-click on it and select the **Configure** option in the pop-up window. The Device Manager for the selected entity opens, displaying the main page for the device.

7.1.2 The Device Manager Components

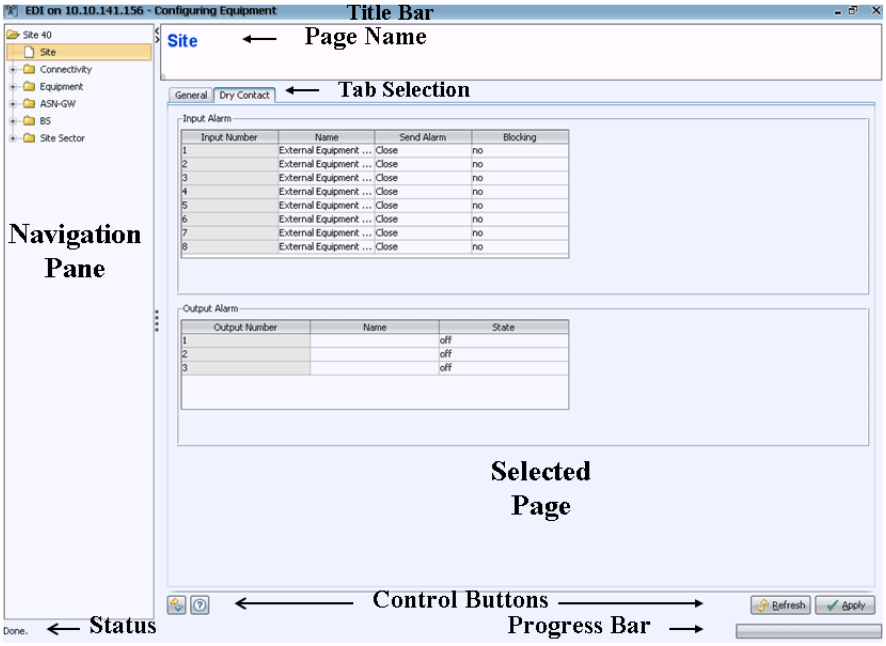


Figure 7-1: The Device Manager Components (Indoor BTS)

The Device Manager window comprises the following components:

Component	Description
Title Bar	Identifies the managed device's name. It also includes standard icons for minimizing, maximizing or closing the Device Manager.
Page Name	The name of the current page.
Navigation Pane	Displays all configuration/information pages and enables opening a selected page by clicking on it.
Tab Selection	Enables selection among tabs in pages with two or more tabs.
Selected Page	The selected page. Enables viewing/managing the applicable parameters
Status Bar	Indicates the status of the current operation, and displays a progress bar when applicable.

7.1.3 Common Control Buttons

The following buttons are common to most configuration/information pages.

Button	Description
Help	Opens the Help Navigator and Help Topic Window for the page.
Refresh from Device	Updates the information displayed in the page according to current values acquired from the device
Refresh	Updates the information displayed in the page according to current values acquired from the database
Apply	Implements the modifications to the configuration of the device. Exiting the Device Manager or switching to another page without applying discards the changes. This button is not available in information pages that display read-only details and do not include any configurable parameters.

7.1.4 Working with Configuration Tables

In some pages, tables are used for displaying information and for configuring and managing multiple entities of the same type.

Grayed-out cells are read-only.

To modify the configuration of an existing entity:

Double-click on the applicable cell: In a text-cell, edit the content. In some cells a drop-down menu will open, enabling selection of the required option. Click on any other cell to apply the change to the selected cell. At this stage the change is applied only to the display, and the displayed parameters of the modified entry are colored blue. The change is applied to the device only after clicking on the **Apply** button.

To add a new entity (if applicable):

Click on the **Add** button. A new row will be added. Some parameters may be set to their default values, allowing (if applicable) modification to other values. Configure the required parameters. At this stage the change is applied only to the display,

and the displayed parameters of the new entry are colored green. The change is applied to the device only after clicking on the **Apply** button.

To delete one or several entities (if applicable):

Select the entities you want to delete and click on the **Delete** button. At this stage the change is applied only to the display, and the displayed parameters of the entries to be deleted are colored red. The change is applied to the device only after clicking on the **Apply** button.

7.2 Introduction to Device Management

The tree menu in the navigation pane of the Device Manager window enables selecting the following view and configuration pages:

- "Equipment View Page" on page 134
- "Site Page" on page 140
- "Connectivity":
  - "L1/L2 Connectivity Page" on page 147
  - "Management Page" on page 152
  - "ASN-GW Bearer Interface Page" on page 176
  - "ASN-GW Pools Page" on page 177
  - "Keep Alive Page" on page 178
- "Equipment":
  - "Shelf":
    - "Power Supply Page" on page 181
    - "NPU Page" on page 183
    - "AU" on page 186 with an "AU <Type and Slot #> Page" for each created AU.
  - "External":
    - "ODU" on page 192 (Macro Indoor/Outdoor BTS) with an "ODU <#> Page" for each created ODU, or "Radio" on page 197 (Micro Outdoor BTS) with Radio 1 and Radio 2 pages"ODU <#> Page".
    - "GPS Page" on page 200
    - "Power Feeder Page" on page 205
    - "Antenna Page" on page 207

- "ASN-GW":
  - "AAA Page" on page 211
  - "Service Group Page" on page 214
  - "QoS Marking Page" on page 225
  - "SFA Page" on page 228
  - "Hot Lining Page" on page 239
- "BS" node, with the following per each BS sub-node:
  - "Radio"
    - "Radio Basic Page" on page 248
    - "Radio Advanced Page" on page 264
  - "R6/R8 Bearer Interface Page"
- "Site Sector" on page 278 Node, with a "Site Sector <#> Page" for each created sector.

7.3 Equipment View Page

The Equipment View page is applicable for Macro Indoor/Outdoor BTS and Mini-Centralized ASN-GW.

"Equipment View Page for Macro BTS Equipment"

"Equipment View Page for Mini-Centralized ASN-GW"

7.3.1 Equipment View Page for Macro BTS Equipment

The Equipment View page provides a graphical view of the current status of the Macro BTS's components. The display is refreshed every 15 seconds.

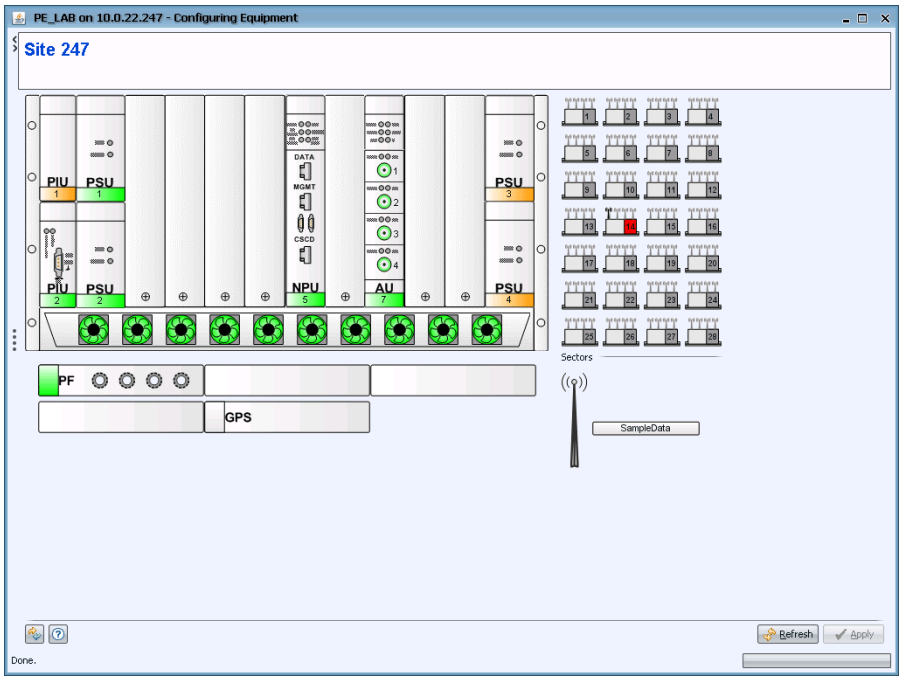


Figure 7-2: Equipment View Page, Macro Indoor BTS

The Equipment View for Macro BTS page includes the following components:

- "Chassis View (Macro Indoor BTS)" or "Components View (Macro Outdoor BTS)", according to the type of the managed device.
- "Outdoor Units View"

- "Sectors View"
- "External Devices View"

7.3.1.1 Chassis View (Macro Indoor BTS)

The Chassis view is a graphical display of the BTS, showing the installed components and their status. Each of the installed modules (NPU, AUs, PIUs, PSUs) and the 10 fans of the AVU module is marked in a color according to the highest severity open alarm. Green indicates that there are no alarms on the component.

The following information and actions are available:

- PIUs/PSUs: If the module is installed, the background color of its number indicates its highest severity open alarm. Green indicates that there are no alarms on the component. If the module is defined as Required (refer to "Power Supply Page" on page 181) but is not installed, the background color is yellow. Double-click on an installed or a required but not installed module to open the Power Supply configuration page (refer to "Power Supply Page" on page 181).
- Double-click on the NPU module to open the NPU page (refer to "NPU Page" on page 183).
- In an installed AU, the background color of its number indicates its highest severity open alarm. Green indicates that there are no alarms on the component. If the module is defined as Required (refer to "Card Properties" on page 184) but is not installed, the background color is orange. If a module is installed but not defined yet, the background color is purple. Double-click on an installed or a required but not installed AU to open the configuration page for the selected AU (refer to "AU <Type and Slot #> Page" on page 188).
- In an installed AU, each of the ODU connectors (channels) are marked as follows:
  - » Green: The ODU port is Up (no fault) and the ODU port is set to No Shutdown.
  - » Red: The ODU port is Down (fault) or the ODU port is set to Shutdown.
- Double-click on an "empty" AU module to open the New AU dialog box, allowing you to define the properties of the AU required for the slot. Refer to "Creating/Deleting an AU" on page 186 for more details.

- Click on an installed AU port to view relevant associations (if applicable): A blue background will be added to the selected AU Port as well as to the ODU and Site Sector associated with it.

7.3.1.2 Components View (Macro Outdoor BTS)

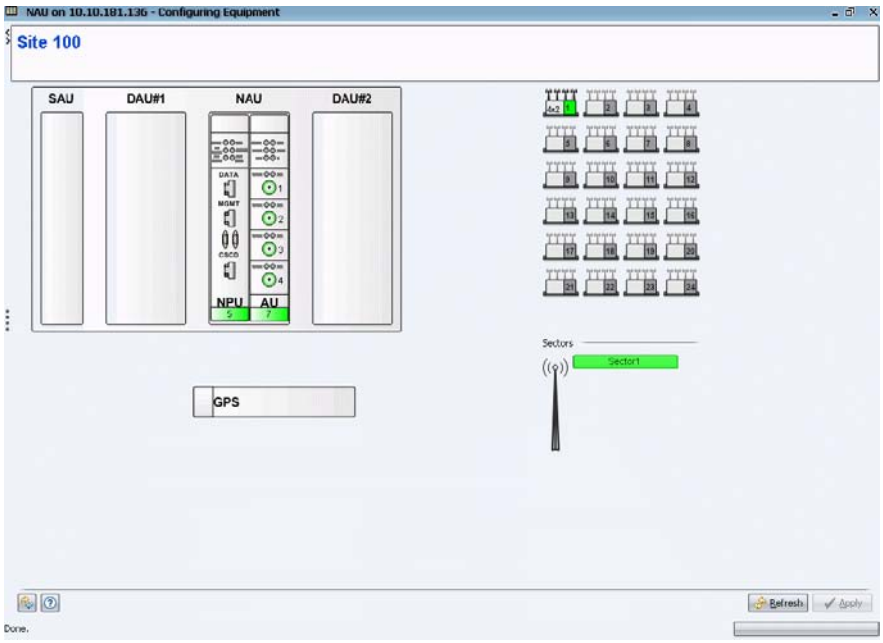


Figure 7-3: Site View Page, Macro Outdoor BTS (with a 4-channels AU)

The components view is a graphical display of the BTS, showing the installed components and their status. Each of the installed modules (NPU, AUs) is marked in a color according to the highest severity open alarm. Green indicates that there are no alarms on the component.

The following information and actions are available:

- Double-click on the NPU module to open the NPU page (refer to "NPU Page" on page 183).

- In an installed AU, the background color of its number indicates its highest severity open alarm. Green indicates that there are no alarms on the component. If the module is defined as Required (refer to "Card Properties" on page 184) but is not installed, the background color is orange. If an AU is installed but not defined yet, the background color is purple. Double-click on an installed or a required but not installed AU to open the configuration page for the selected AU (refer to "AU <Type and Slot #> Page" on page 188).

- In an installed AU, there are either four (4-channels AU) or two (2-channels AU) ODU connectors (channels) that are marked as follows:
  - » Green: The ODU port is Up (no fault) and the ODU port is set to No Shutdown.
  - » Red: The ODU port is Down (fault) or the ODU port is set to Shutdown.
- Double-click on an "empty" AU module to open the New AU dialog box, allowing you to define the properties of the AU required for the slot. Refer to "Creating/Deleting an AU" on page 186 for more details.
- Click on an installed AU port to view relevant associations (if applicable): A blue background will be added to the selected AU Port as well as to the ODU and Site Sector associated with it.

7.3.1.3 Outdoor Units View

The Outdoor Units view shows the ODU icons all the Outdoor Units (up to 28 for Macro Indoor BTS, up to 24 for Macro Outdoor BTS) that can be defined. An undefined ODU is marked in gray. A defined ODU is marked in either green or red, indicating its operational status. Note that the operational status of an ODU can be OK (Up) only if there are no alarms. If you create an ODU and do not associate it (see "Site Sector <#> Page" on page 279), it will be marked in green, however it will not be operational.

If the ODU exists and is associated (meaning that it is reachable), its ports configuration (1x1 or 4x2) will be indicated on the left side.

Click on an associated ODU's icon to view relevant associations: A blue background will be added to the selected ODU as well as to the AU ODU connectors (AU channels) and Site Sector associated with it.

Double-click on any of the defined ODUs to open the specific ODU configuration page.

7.3.1.4 Sectors View

The Sectors view shows text boxes for the defined Site Sectors. The name of a defined Sector is displayed in the relevant area. Note that the name can also be an empty string (null). It is recommended to define a Sector Name for all defined sectors to provide clear distinction between site sectors.

Click on a Sector's text box to view relevant associations: A blue background will be added to the selected Sector as well as to the ODU(s) and AU channel(s) associated with it (if applicable).

Double-click on any of the Site Sectors to open the specific site sector configuration page.

7.3.1.5 External Devices View

The External Devices View (below the Chassis View) displays information related to external devices connected to the BTS. In the current release the applicable devices are GPS and, if defined, Power Feeder(s). Power Feeders are not applicable for a Macro Outdoor BTS.

The GPS indication includes the status of the signal received from the GPS equipment. If GPS is not configured the GPS status indication is marked gray.

Double-click on the GPS status indication to open the GPS configuration page (refer to "GPS Page" on page 200).

The status indication of a defined Power Feeder (PF) is always green. Double-click on the Power Feeder status indication to open the Power Feeder configuration page (refer to "Power Feeder Page" on page 205)

7.3.2 Equipment View Page for Mini-Centralized ASN-GW

The Equipment View page provides a graphical view of the current status of the Mini-Centralized ASN-GW. The display is refreshed every 15 seconds.

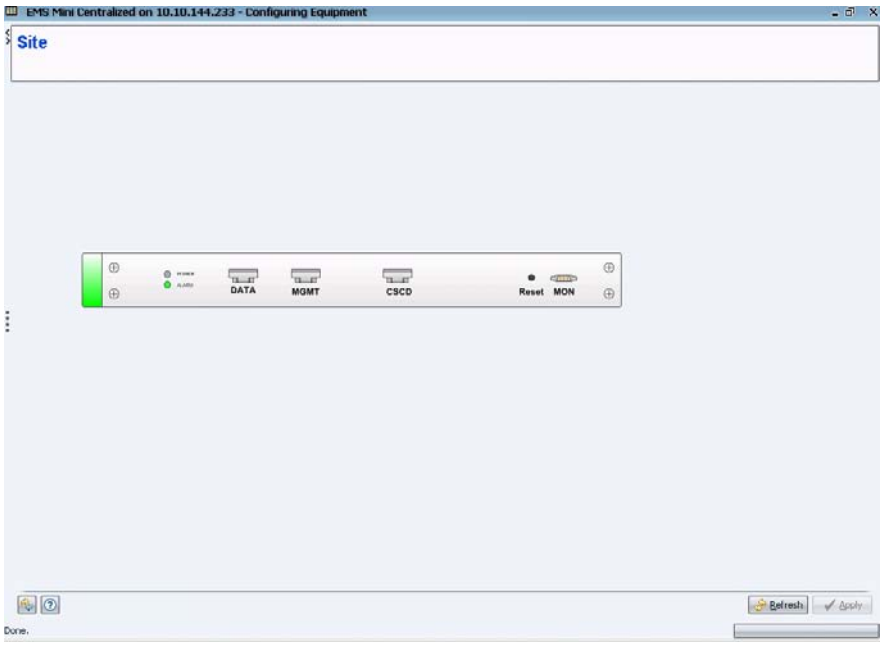


Figure 7-4: Equipment View Page, Mini-Centralized ASN-GW

The Mini-Centralized ASN-GW view shows the Mini-Centralized ASN-GW device. The color marking on the left side is according to the highest severity open alarm. Green indicates that there are no alarms on the device.

Double-click on the device's drawing to open the NPU page (refer to "NPU Page" on page 183).

7.4 Site Page

The Site page enables defining general site properties, such as the site location, date and time, and ASN Topology settings, as well as the use of input and output alarms, time synchronization, and clock source settings.

The Site page comprises the following tabs:

- "Site General Tab"
- "Site Dry Contact Tab" (applicable only for Macro Indoor BTSs)

7.4.1 Site General Tab

The General tab enables viewing/editing the general site properties. For BTS equipment it also enables viewing/editing the ASN Topology.

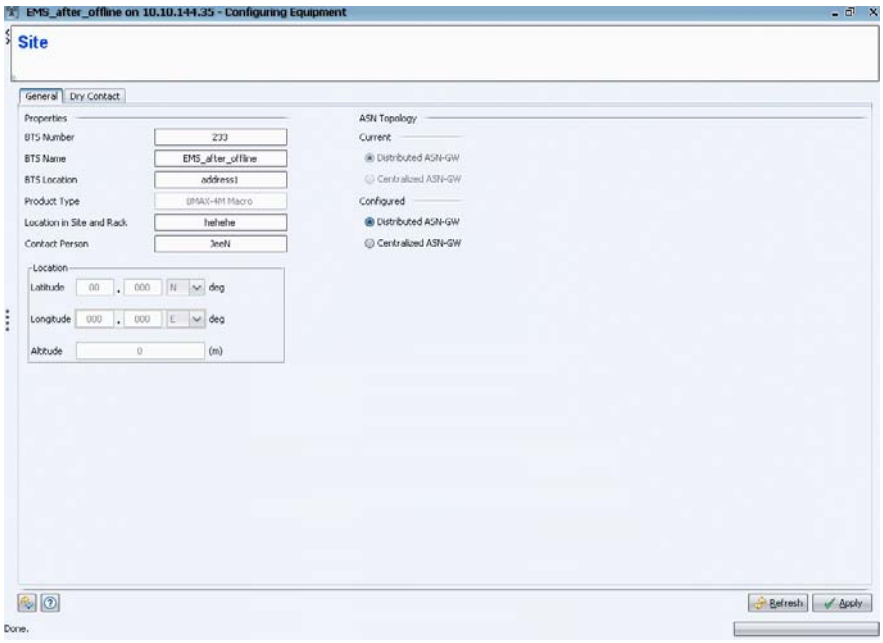


Figure 7-5: Site Page - General Tab (BTS)

The General tab includes the following sections:

- "Properties"
- "ASN Topology" (not applicable for Mini-Centralized ASN-GW)

- "Location" (not applicable for Mini-Centralized ASN-GW)

7.4.1.1 Properties

The Properties section includes the following parameters:

Parameter	Description
BTS Number	The ID number of the device. The BTS Number (Site ID) is used by the management system as identifier of the device and must be unique in the managed network. The range is from 0 to 999999. The default value 0 is not a valid BTS Number: it indicates that the BTS Number was not configured and a valid BTS Number must be configured. A BTS with Site Number 0 will not be discovered by the management system. Since the BTS Number is used by the management system to identify the device, it is highly recommended not to modify it. If necessary, you must follow the BTS Number Change process described below.
BTS Name	The name of the device. An optional descriptive parameter. A string of up to 32 characters.
BTS Location	The location of the device (e.g., 21 Main Street, 2nd Floor). An optional descriptive parameter. A string of up to 70 characters.
Product Type	A read-only description of the product type.
Location in Site and Rack	An optional description of the physical location of the device in the site/rack. A string of up to 32 characters.
Contact Person	The name of the site contact person. An optional descriptive parameter. A string of up to 32 characters.

IMPORTANT

BTS Number (Site ID) Change Process:

1 Change the BTS Number (Site ID) using either the management system or CLI. If you are using CLI, run the command *npu(config)# site identifier <site id <0-999999>>* and save the new configuration using the command *npu# write*.

2 Restart the site (NPU) to apply the change. This will clean the active alarms and the Performance Monitoring files with the old BTS Number (ID) from the database of the NPU].

3 Delete “old” site from the database of the management system (In the Equipment Manager select the BTS and click Delete).

4 The management system will automatically close all open alarms, remove the old BTS Number (ID) from all the tasks such as Performance Collection, Backup Configuration and, Keep Alive. It will also stop processing new alarms form this “old” site.

5 The user should perform manual discovery of the “new” device with the old IP address (which now doesn’t exist in the database of the management system). After discovery the management system will initiate full synchronization as for any new device.

6 The management system will add this new device to all network-wide tasks such as keep-alive.

7 Regarding user-initiated tasks such as Performance Collection and Backup Configuration, the user should manually modify and add this device to the existing tasks.

7.4.1.2 ASN Topology

The ASN Topology section includes the Current and Configured options of the ASN Topology parameter:

- Distributed ASN-GW: In this mode, the NPU implements ASN-GW functionalities, that is, it implements R3 Reference Point (RP) towards the CSN, R4 reference point toward other ASN-GWs, and R6 reference point toward AU/BSs. The R8 reference point traffic is transparently relayed between AU/BSs (intra- or inter-shelf).

- Centralized ASN-GW: In this mode, the NPU transparently relays R6 and R8 reference-point traffic between AU/BSs (intra- or inter-shelf).

The ASN Topology parameter is not applicable for Mini-Centralized ASN-GW that operates always in Distributed ASN-GW ASN Topology and for Micro Outdoor BTS that operated always in Centralized ASN-GW ASN Topology.

IMPORTANT

A change in ASN Topology will take effect after next reset.

7.4.1.3 Location

Not applicable for Mini-Centralized ASN-GW.

The Location section in the Site page includes the following read-only parameters:

Parameter	Description
Longitude	The longitude of the site. The format is lll.mmm,a: lll.is longitude in degrees (between 000 to 179); mmm is in minutes (between 000 and 999); a - is E (east) or W (west).
Latitude	The latitude of the site. The format is ll.mmm,a: ll.is latitude in degrees (between 00 to 89); mmm is in minutes (between 000 and 999); a - is N (north) or S (south).
Altitude	The altitude in meters of the site. The Altitude is in meters, from -300.0 to 9000.0.

The Location parameters are configurable in the GPS page (see "Location" on page 203) for devices with GPS Type set to None. Otherwise the values are calculated by the GPS receiver.

7.4.2 Site Dry Contact Tab

The Dry Contact tab is applicable only for Macro Indoor BTSs.

The Dry Contact tab enables defining the use of input and output alarms.

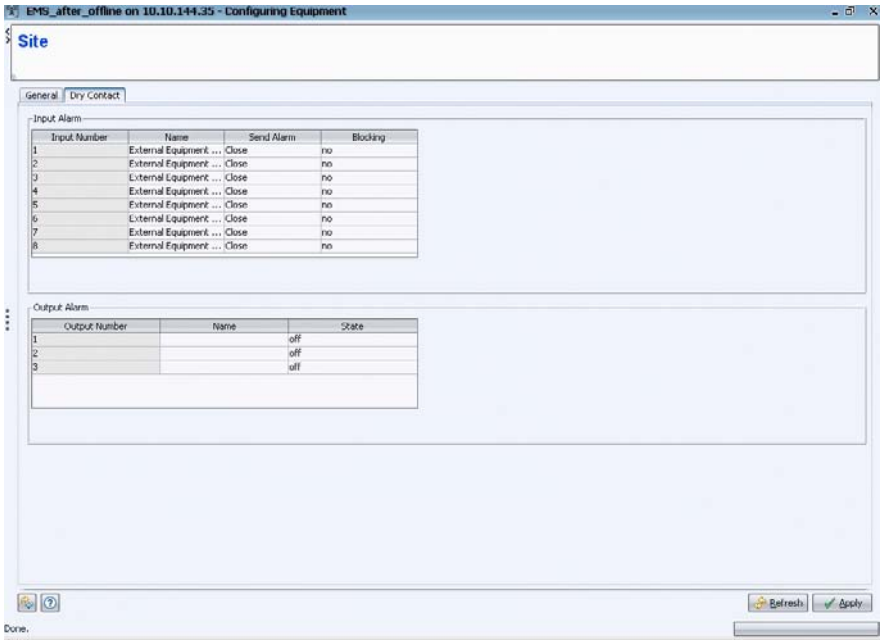


Figure 7-6: Site Page - Dry Content Tab

The Dry Contact tab includes the following sections:

- "Inputs Alarm"
- "Output Alarm"

7.4.2.1 Inputs Alarm

Dry-contact input alarms are external devices that are connected to the BTS unit, and notify the system when there is a change in external conditions.

The Inputs Alarm table includes the following parameters:

Parameter	Description
Input Number	The Input Alarm Number (1-8). Refer to the table below for details on the mapping of Input Alarm Numbers to pins in the ALRM-IN connector.

Parameter	Description
Name	The name of the input alarm. Double-click on an entry to open the drop-down selection menu with the following options: ■ Commercial Power Failure ■ Fire ■ Enclosure Door Open ■ High Temperature ■ Flood ■ Low Fuel ■ Low Battery Threshold ■ Generator Failure ■ Intrusion Detection ■ External Equipment Failure The default for all 8 Input Alarms is External Equipment Failure
Send Alarm	Defines the contacts condition for activating the alarm: Close or Open. The default for all 8 Input Alarms is Closed.
Blocking	Indicates whether or not blocking is applied for the input alarm (yes or no). If blocking is applied alarm will not be generated regardless of the status of the input. Double-click on an entry to open the drop-down selection menu with the yes and no options. The default for all 8 Input Alarms is no.

The mapping of the ALRM-IN connector's pins to alarms is:

Pin Number	Alarm Number
3 and 15	1
4 and 16	2
1 and 17	3
6 and 18	4
7 and 19	5
8 and 20	6

9 and 21	7
10 and 22	8

7.4.2.2 Output Alarm

Dry-contact output alarms can be raised/cleared by the user to notify an external device connected to the unit.

The Outputs Alarm table includes the following parameters:

Parameter	Description
Output Number	The Output Alarm Number (1-3). Refer to the table below for details on the mapping of Output Alarm Numbers to pins in the ALRM-OUT connector
Name	The name of the output alarm. A descriptive string of up to 256 characters.
State	Indicates the state of the output alarm (On or Off). Double-click on an entry to open the drop-down selection menu with the on and off options. The default for all 3 Output Alarms is off.

The mapping of the ALRM-OUT connector's pins to alarms is:

Pin Number	Corresponding Alarm Number
1(FIX) - 2(N.C) - 14(N.O)	1
11(FIX)- 12(N.C) - 13(N.O)	2
23(FIX) - 24(N.C) - 25(N.O)	3

7.5 Connectivity

The Connectivity node includes five pages:

- "L1/L2 Connectivity Page"
- "Management Page"
- "ASN-GW Bearer Interface Page"
- "ASN-GW Pools Page"
- "Keep Alive Page"

7.5.1 L1/L2 Connectivity Page

The L1/L2 Connectivity page enables viewing/modifying defining the various aspects of site connectivity, such as the parameters of Ethernet ports, VLAN IDs, and External Ether Type.

This section includes:

- "L1/L2 Connectivity Page for Macro BTS and Mini Centralized ASN-GW"
- "L1/L2 Connectivity Page for Micro Outdoor BTS"

7.5.1.1 L1/L2 Connectivity Page for Macro BTS and Mini Centralized ASN-GW

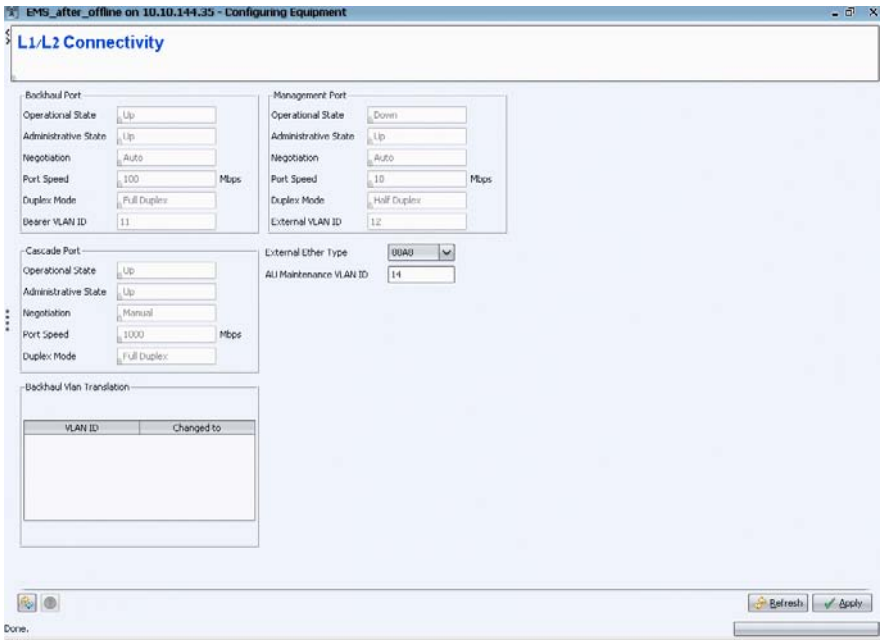


Figure 7-7: L1/L2 Connectivity Page (Macro Indoor BTS)

The L1/L2 Connectivity tab includes the following sections:

- "Backhaul Port"
- "Cascade Port"
- "Management Port"
- "External Ether Type"
- "AU Maintenance VLAN ID"
- "Backhaul VLAN Translation"

7.5.1.1.1 Backhaul Port

The Backhaul Port section includes the following parameters of the backhaul (DATA) Ethernet port (excluding Bearer VLAN ID, all port's configurable parameters can be configured only via CLI):

Parameter	Description
Operational State	Read-only. The operational status of the Ethernet port (Up or Down).
Administrative State	Read-only. The administrative status of the port (Up or Down).
Negotiation	Read-only. The mode for negotiating the port speed and the duplex (half or full) status with the link partner. The options are Auto and Manual.
Port Speed	Read-only. The port speed to be used for the physical interface. The available options are 10, 100 and 1000 (Mbps).
Duplex Mode	Read-only. The duplex status for the interface (Full-Duplex or Half Duplex).
Bearer VLAN ID	The VLAN ID of the bearer interface used for enabling bearer IP domain connectivity. When the Unified connectivity mode is selected, the NMS server is also connected using the bearer interface. The available range is 11-100, 110-4094. The default is 11. Configurable only in a Macro BTS operating in Distributed ASN-GW ASN Topology (see Section 7.4.1.2). In a Mini-Centralized ASN-GW and a Macro BTS operating in Centralized ASN-GW ASN Topology, this parameter is configurable in the ASN-GW Bearer Interface page (see "ASN-GW Bearer Interface Page" on page 176). If the value is other than the default (11), it will be indicated in the Backhaul VLAN Translation table.

7.5.1.1.2 Cascade Port

The Cascade Port section includes the following read-only parameters of the Cascade Ethernet port (all port's configurable parameters can be configured only via CLI):

Parameter	Description
Operational State	Read-only. The operational status of the Ethernet port (Up or Down).
Administrative State	Read-only. The administrative status of the port (Up or Down).
Negotiation	Read-only. The mode for negotiating the port speed and the duplex (half or full) status with the link partner. The options are Auto and Manual.
Port Speed	Read-only. The port speed to be used for the physical interface. The available options are 10, 100 and 1000 (Mbps).
Duplex Mode	Read-only. The duplex status for the interface (Full-Duplex or Half Duplex).

7.5.1.1.3 Management Port

The Management Port section includes the following read-only parameters of the Management Ethernet port (all port's configurable parameters can be configured only via CLI):

Parameter	Description
Operational State	Read-only. The operational status of the Ethernet port (Up or Down).
Administrative State	Read-only. The administrative status of the port (Up or Down).
Negotiation	Read-only. The mode for negotiating the port speed and the duplex (half or full) status with the link partner. The options are Auto and Manual.
Port Speed	Read-only. The port speed to be used for the physical interface. The default is 100 Mbps.
Duplex Mode	Read-only. The duplex status for the interface (Full-Duplex or Half Duplex).

7.5.1.1.4 External Ether Type

Parameter	Description
External Ether Type	Not applicable for a BTS operating in Centralized ASN Topology. The Layer 2 Ether Type configures the outer VLAN header of uplink Q-in-Q traffic The available values are 8100, 88A8, 9100, 9200. The default is 88A8.

7.5.1.1.5 AU Maintenance VLAN ID

Parameter	Description
AU Maintenance VLAN ID	Not applicable for Mini-Centralized ASN-GW. The service interface of the AU is used for uploading maintenance reports to an external server. Most of the service interface parameters except the VLAN ID are configured separately for each AU (see "AU Card Properties Tab" on page 189). The AU maintenance VLAN ID is the VLAN ID used by all AU service interfaces. The available range is 1-9, 11-100, 110-4094. The default is 14.

7.5.1.1.6 Backhaul VLAN Translation

The Backhaul VLAN Translation table lists the read-only values of the default and current VLAN ID(s) used on the Backhaul (Data) port, if the current value differs from the default:

Parameter	Description
VLAN ID	The original (default) VLAN ID. Must be a VLAN ID that is allowed on the port: a. Bearer VLAN ID (the default is 11) b. External Management VLAN ID: Applicable only in In-Band connectivity mode (the default is 12).
Changed to	The current value of the VLAN ID assigned to the relevant interface.

7.5.1.2 L1/L2 Connectivity Page for Micro Outdoor BTS

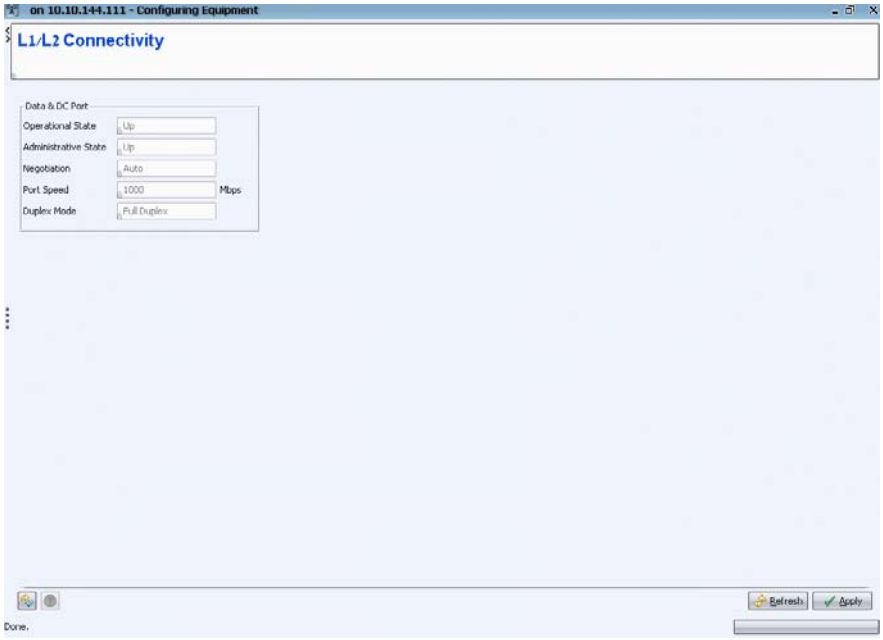


Figure 7-8: L1/L2 Connectivity Page (Micro Outdoor BTS)

The L1/L2 Connectivity page of the Micro Outdoor BTS includes the following parameters of the Data & DC Ethernet port:

Parameter	Description
Operational State	Read-only. The operational status of the Ethernet port (Up or Down).

Parameter	Description
Administrative State	The administrative status of the port (Up or Down).
Negotiation	The mode for negotiating the port speed and the duplex (half or full) status with the link partner. The options are Auto and Manual. The default is Auto.
Port Speed	The port speed to be used for the physical interface. Configurable only if Negotiation mode is Manual. The available options are 10, 100 and 1000 (Mbps). The default is 1000.
Duplex Mode	The duplex status for the interface (Full-Duplex or Half Duplex). Configurable only if Negotiation mode is Manual. The default is Full-Duplex.

7.5.2 Management Page

The Management page comprises the following tabs:

- "Management Interface Tab"
- "QoS Marking Rules Tab"
- "ACL Tab"
- "IP Routing Tab"
- "SNMP Managers Tab"
- "Performance Tab"
- "Logging Tab"

7.5.2.1 Management Interface Tab

The Management Interface tabs enables viewing/modifying the connectivity mode and parameters of management IP interface(s).

This section includes:

- "Management Interface Tab for Macro BTS and Mini Centralized ASN-GW"
- "Management Interface Tab for Micro Outdoor BTS"

7.5.2.1.1 Management Interface Tab for Macro BTS and Mini Centralized ASN-GW

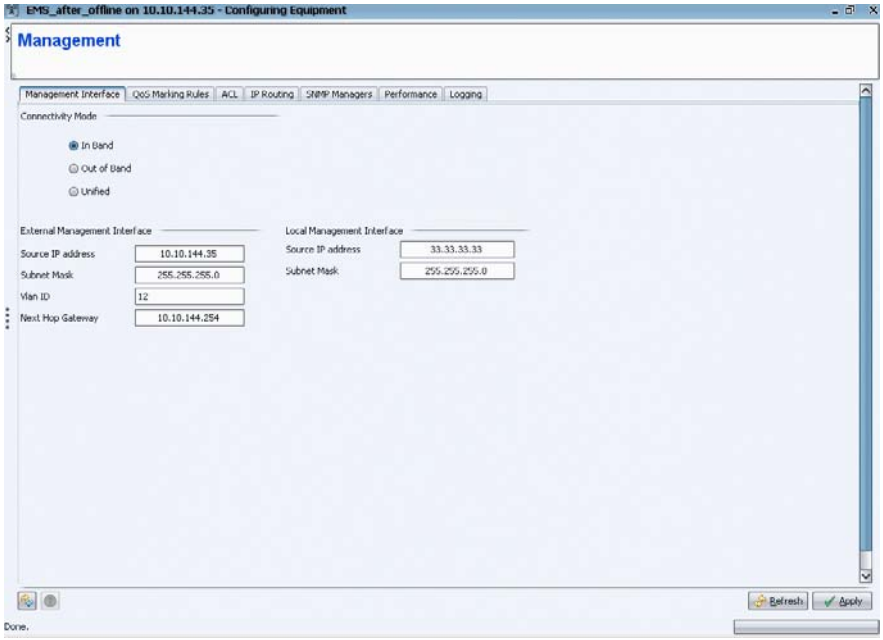


Figure 7-9: Management Page, Management Interface Tab (Macro BTS)

The Management Interface tab for Macro BTS and Mini Centralized ASN-GW includes the following sections:

- "Connectivity Mode"
- "External Management Interface"
- "Local Management Interface"
- "Effects of Changes in IP Interface's Parameters"

7.5.2.1.1.1 Connectivity Mode

The Connectivity Mode section enables separation of the bearer IP and NMS IP domains through definition of the connectivity mode.

The following NMS connectivity modes are available for selection:

Parameter	Description
In Band	When In Band mode is selected, the VLAN is used to differentiate between the bearer and external NMS IP domains on the DATA port. The bearer VLAN is used for the bearer IP domain and the external-management VLAN is used for the external NMS IP domain. The MGMT port and CSCD (Cascade) port are assigned to the local-management VLAN in this connectivity mode.(The CSCD port is not applicable for Macro Outdoor BTS)
Out of Band	When Out of Band mode is selected, the bearer and external NMS IP domains are separated at the Ethernet interface. The DATA port and bearer VLAN is used for the bearer IP domain, and the MGMT port and external-management VLAN is used for external NMS connectivity. The CSCD port is assigned to the local-management VLAN. (The CSCD port is not applicable for Macro Outdoor BTS).
Unified	When Unified mode is selected, the bearer IP domain and external NMS IP domain are unified on the DATA port, meaning that the same IP address and VLAN are used to connect to the NMS server, AAA server, HA, and BS. (The MGMT port and CSCD port are assigned to the local-management VLAN in this connectivity mode. (The CSCD port is not applicable for Macro Outdoor BTS)

The default Connectivity Mode is In Band.

IMPORTANT

A change in Connectivity Mode will take effect after next reset.

7.5.2.1.1.2 External Management Interface

The External Management Interface section includes the following parameters:

Parameter	Description
Source IP Address	The IP address of the interface. The default is 192.168.1.1. In a Macro BTS operating in Distributed ASN-GW ASN Topology and Mini-Centralized ASN-GW, if the Connectivity Mode is set to Unified the Source IP Address is not configurable and is set to the value configured for the ASN-GW Bearer Interface Source IP Address (see "ASN-GW Bearer Interface Page" on page 176). A change in this parameter will affect the relevant rules for ACL 199 and all entries in the IP Routing table using the External Management Source IP Address as the Destination. For details refer to Section 7.5.2.1.1.4 below.

Parameter	Description
Subnet MAsk	The IP subnet mask of the interface. The default is 255.255.255.0. In a Macro BTS operating in Distributed ASN-GW ASN Topology and Mini-Centralized ASN-GW, if the Connectivity Mode is set to Unified the Subnet Mask is not configurable and is set to the value configured for the ASN-GW Bearer Interface Subnet Mask (see "ASN-GW Bearer Interface Page" on page 176).
Next Hop Gateway	The Next Hop (Default) Gateway for the External Management interface.Note: Any change of this parameter will affect all entries in the IP Routing table using the External Management Next Hop Gateway as the Next Hop address. For details refer to Section 7.5.2.1.1.4 below.
VLAN ID	The VLAN ID of external management traffic. The range is 11-100, 110-4094. The default is 12. In a Macro BTS operating in Distributed ASN-GW ASN Topology and Mini-Centralized ASN-GW, if the Connectivity Mode is set to Unified the VLAN ID is not configurable and is set to the value configured for the ASN-GW Bearer Interface VLAN ID (see "ASN-GW Bearer Interface Page" on page 176). When operating in In Band Connectivity Mode, if the value is other than the default (12) it will be indicated in the Backhaul VLAN Translation table (see "Backhaul VLAN Translation" on page 151).

7.5.2.1.1.3 Local Management Interface

The Local Management Interface section includes the following parameters:

Parameter	Description
Source IP Address	The IP address of the interface. The default is 172.31.0.1. A change in this parameter will affect the relevant rules for ACL 199 (see "ACL Tab" on page 159) and IP Routing (see "IP Routing Tab" on page 166).
Subnet MAsk	The IP subnet mask of the interface. The default is 255.255.255.0.

The VLAN ID of the Local Management IP interface is set to 9 and cannot be modified.

7.5.2.1.1.4 Effects of Changes in IP Interface's Parameters

This section describes the actions that will be executed by the management station following any change the Source IP Address or the Next Hop Gateway of an IP interface:

- Source IP Address

- Next Hop Gateway

The actions described below are applicable also for the ASN-GW Bearer Interface.

1 Following a change in the Source IP Address of an IP interface, the following actions will be executed automatically by the management system:

   » All relevant entries in the IP Routing table (see "IP Routing Tab" on page 166) using the IP interface's Source IP Address as the route's Destination will be updated.

   » All relevant entries in ACL 199 (see "ACL Tab" on page 159) using the IP interface's Source IP Address as the rule's Source IP Address will be updated.

2 Following a change in the Next Hop Gateway of the External Management IP interface, all relevant entries in the IP Routing table (see "IP Routing Tab" on page 166), using the IP Next Hop Gateway as the route's Next Hop, will be updated.

7.5.2.1.2 Management Interface Tab for Micro Outdoor BTS

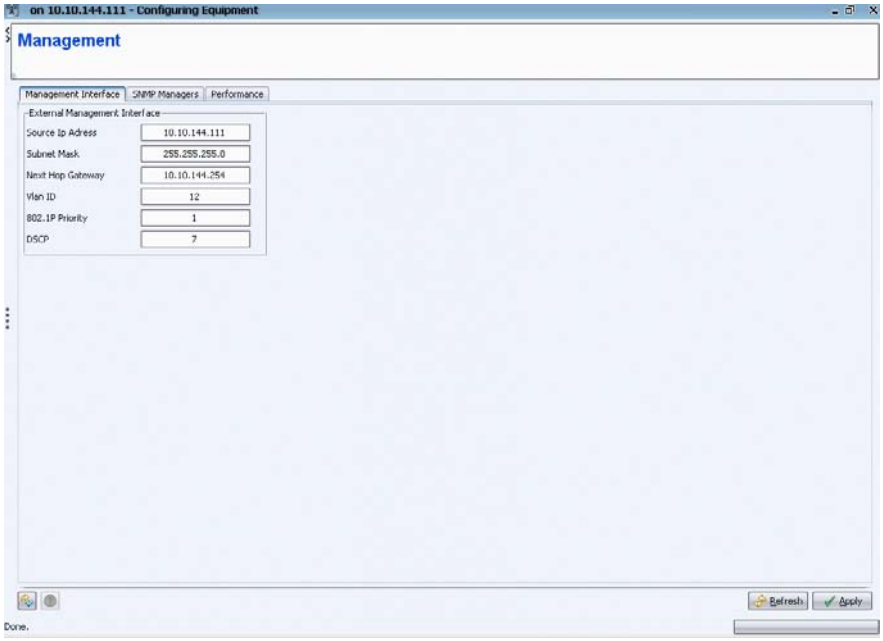


Figure 7-10: Management Page, Management Interface Tab (Micro BTS)

The Management Interface tab for Micro BTS includes the parameters of the Management Interface:

Parameter	Description
Source IP Address	The IP address of the interface. The default is 192.168.1.1.
Subnet MAsk	The IP subnet mask of the interface. The default is 255.255.255.0.
Next Hop Gateway	The Next Hop (Default) Gateway for the Management interface.
VLAN ID	The VLAN ID of management traffic. The range is 11-100, 110-4094. The default is 12.
802.1P Priority	The 802.1P (VLAN) Priority of management traffic, The range is 0-7. The default is 0.
DSCP	The DSCP of management traffic. The range is 0-63. The default is 0.

7.5.2.2 QoS Marking Rules Tab

The QoS Marking Rules tab is not applicable for Micro Outdoor BTSs.

The QoS Marking Rules tab enables defining the rules that classify the signaling and management traffic originating from the NPU into different flows and 802.1p VLAN Priority and/or DSCP values to be applied on traffic that match the criteria defined by the applicable classification rules.

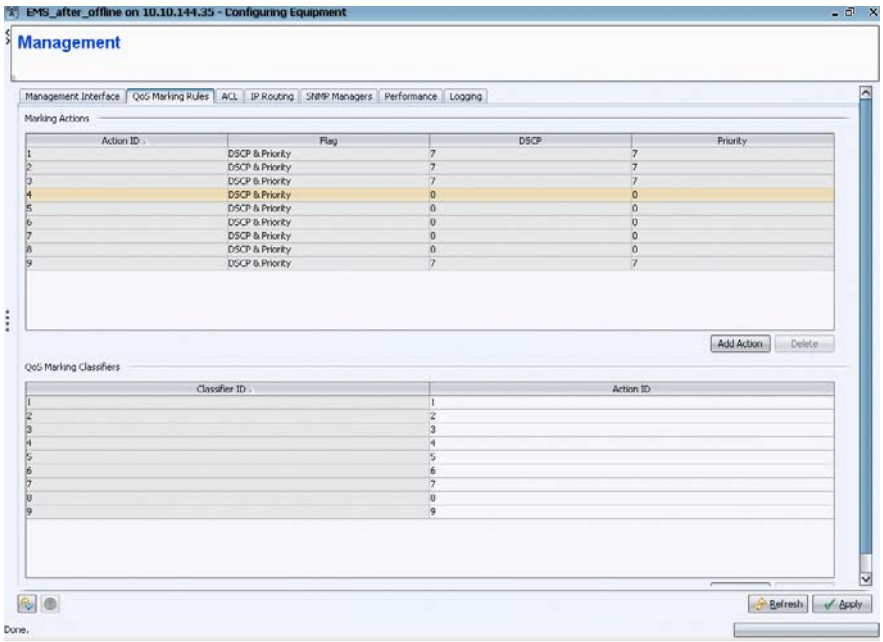


Figure 7-11: Management Page, QoS Marking Rules Tab

The QoS Marking Rules tab includes the following sections:

- "Marking Actions"

- "QoS Marking Classifiers"

7.5.2.2.1 Marking Actions

The Marking Actions table lists the class-maps that define the DSCP and/or VLAN priority bits to be applied for signaling and management traffic originating from the NPU that match relevant criteria.

The Marking Actions table includes the following parameters:

Parameter	Description
Action ID	Read-only. The system-generated auto-sequential ID number.
Flag	Configurable only during creation of a new marking action entry. Defines the type of QoS parameters to be applied appropriate QoS handling of the relevant flow. The option are DSCP, Priority and DSCP & Priority. The default is DSCP & Priority.
DSCP	Configurable only during creation of a new marking action entry. The DSCP value to be applied for this class-map (0-63). The default is 0.
Priority	Configurable only during creation of a new marking action entry. The VLAN priority value to be applied for this class-map (0-7, where 0 is the lowest and 7 is the highest). The default is 0.

The Marking Actions section also includes the following buttons:

Button	Description
Add Action	Adds a new entry to the Marking Actions table.
Delete	Deletes the selected entry (or several selected entries) from the Marking Actions table. An Action ID that is associated to a QoS Marking Classifier cannot be deleted.

By default, Action IDs 1-8 are pre-configured. For more details refer to "ACL Tab" on page 159.

7.5.2.2.2 QoS Marking Classifiers

QoS Marking Classifiers are used to associate Classifier IDs with Action IDs.

The QoS Marking Classifiers table includes the following parameters:

Parameter	Description
Classifier ID	The auto-sequential ID number of the QoS Marking Classifier.

Parameter	Description
Action ID	The action ID number associated to the classifier. Must be one of the Action IDs defined in the Marking Actions table. An Action ID cannot be associated to more than one classifier.

The QoS Marking Classifiers section also includes the following buttons:

Button	Description
Add Classifier	Adds a new entry to the QoS Marking Classifiers table.
Delete	Deletes the selected entry (or several selected entries) from the QoS Marking Classifiers table. A Classifier ID referenced in an ACL Rule (see "ACL Parameters Section" on page 164) cannot be deleted.

By default, Classifier IDs 1-8 are pre-configured, associated with Action IDs 1-8, respectively. For more details on the default use of these classifiers refer to "ACL Tab" on page 159.

Refer to "Effects of Changes in IP Interface's Parameters" on page 155 for details on the effect of changes in the DSCP and/or 802.1P Priority of one of the NPU IP interfaces on the QoS marking rules.

7.5.2.3 ACL Tab

The ACL tab is not applicable for Micro Outdoor BTSs.

The ACL tab enables managing Access Control Lists (ACLs). ACLs are applied on traffic received from the DATA, MGMT or CSCD ports, and destined towards the NPU and (not applicable for Mini-Centralized ASN-GW) the AUs.

By default, all traffic destined towards the AUs or ASN-GW is denied. You can configure ACLs for allowing or dropping traffic destined towards the ASN-GW and/or All AUs that meets certain criteria.

You can create the following types of ACLs:

- Standard (ACL 1-99): Allows you to filter traffic based on the source and destination IP addresses.
- Extended (ACL 100-198): Allows you to filter traffic based on the source and destination IP addresses, source and destination ports, and protocol.

- Extended ACL 199 is used only for QoS Marking rules for classifying traffic originating from the NPU and applying DSCP and/or Priority values for proper QoS handling of traffic that meets certain criteria. This ACL cannot be deleted.

By default, ACL 199 includes 8 pre-configured rules, referencing pre-configured classifiers that point to pre-configured actions:

IP Interface (Source IP Address)	Type of Traffic	Protocol	Source Port	Classifier ID	Action ID	DSCP	Priority
Bearer	RADIUS	UDP	1812	1	1	7	7
Bearer	Mobile IP - Agent	UDP	434	2	2	7	7
Bearer	WiMAX ASN Control Plane Protocol	UDP	2231	3	3	7	7
Internal Management (not applicable for Mini-Centralized ASN-GW)	OBSAI message exchange between NPU and AU	UDP	10009	4	4	0	0
Internal Management (not applicable for Mini-Centralized ASN-GW)	Trivial File Transfer	UDP	69	5	5	0	0
External Management	Telnet	TCP	23	6	6	0	0
External Management	SSH Remote Login Protocol	TCP	22	7	7	0	0
External Management	SNMP	UDP	161	8	8	0	0

An ACL can be attached to the ASN-GW. In BTS equipment it can also be attached to the AUs or both ASN-GW and AUs (Excluding ACL 199 that cannot be attached to any interface).

You can create the following types of rules for an ACL (excluding ACL 199):

- Allow: Indicates that traffic matching the filter criteria is allowed to reach the ASN-GW and/or AUs.

- Drop: Indicates that traffic matching the filter criteria is dropped, and not allowed to reach the ASN-GW and/or AUs.

You can configure multiple rules for each ACL; the priority for these rules is applied with respect to the sequence in which these rules are configured.

By default, in BTS equipment traffic towards the AUs is not restricted. This is implemented through the pre-configured ACL 1 which is available by default. ACL 1 is attached to All AU, with Rule Action = Allow, Source IP Address = Any and Destination IP Address = Any.

Several additional default ACLs are created automatically to allow some restricted traffic towards the NPU. These ACL rules are applied automatically at the time of NPU startup or upon a change of IP address of various interfaces. These ACLs cannot be deleted or modified. The automatically created ACLs are Standard ACLs 96, 97, 98 and Extended ACL 186.

IMPORTANT

Although they are always supported, the automatically created ACLs (96, 97, 98 and 186) are not displayed by the management system.

All the following automatically created standard default ACLs are attached to the NPU virtual interface and include a single Permit rule:

Table 7-1: Default Standard ACLs

ACL Number	Rule Action	Source IP Address	Destination IP Address
ACL 96 (not applicable for Mini-Centralized ASN-GW)	Allow	Any	Internal Management IP address
ACL 97	Allow	Any	External Management IP address
ACL 98	Allow	Any	Local Management IP address

The default Extended ACL 186 attached to the NPU virtual interface includes the following Allow rules allowing certain traffic towards the Bearer interface:

Table 7-2: Rules of Default Extended ACL 186

Rule Action	Source IP Address	Source Port	Destination IP Address	Destination Port	Protocol
Allow	Any	Any	Bearer IP address	Any	ICMP (1)
Allow	Any	Any	Bearer IP address	2231 (used for WiMAX ASN Control Plane Protocol)	UDP (17)
Allow	Any	Any	Bearer IP address	1812-1813 (used for RADIUS Authentication and Accounting)	UDP (17)
Allow	Any	Any	Bearer IP address	69 (used for TFTP)	UDP (17)
Allow	Any	Any	Bearer IP address	1022-1023 (used for software download)	UDP (17)

Additional Extended ACLs are created automatically for every Service Group that is associated with a VLAN Service Interface and an enabled VLAN Service. Up to 10 ACLs, numbered ACL 187 to ACL 196, can be created, These automatically created/deleted ACLs allow Ping and DHCP traffic on the DHCP Own IP Address interface of the applicable VLAN service:

Table 7-3: Rules of Default VLAN Service Interfaces ACL 187-196

Rule Action	Source IP Address	Source Port	Destination IP Address	Destination Port	Protocol
Allow	Any	Any	DHCP Own IP Address defined for the applicable Service Group	Any	ICMP (1)
Allow	Any	Any	DHCP Own IP Address defined for the applicable Service Group	67-68 (used for DHCP traffic)	UDP (17)

IMPORTANT

The default pre-configured and automatically created ACLs cannot be deleted and should not be modified.

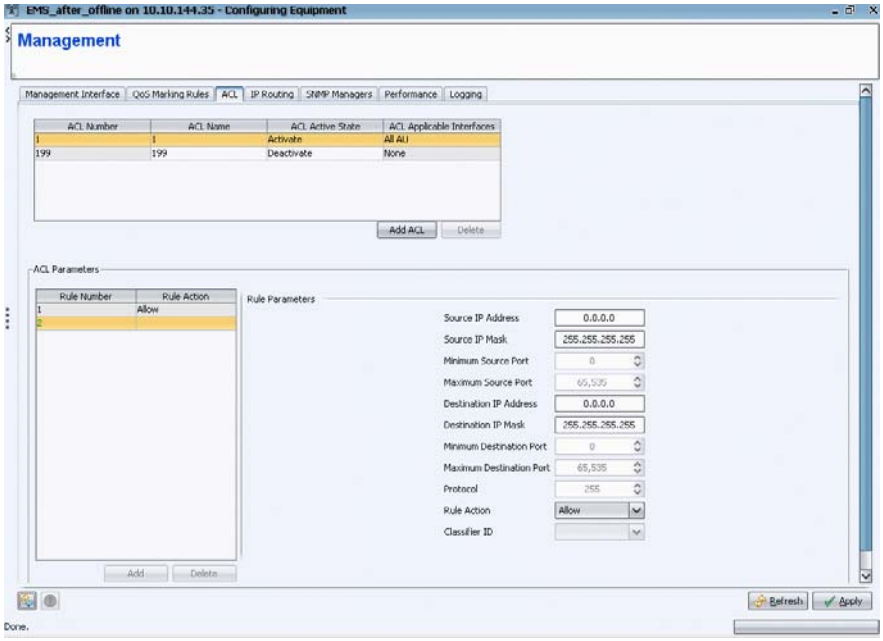


Figure 7-12: Management Page, ACL Tab

The ACL tab includes the following sections:

- "ACL Table"
- "ACL Parameters Section"

7.5.2.3.1 ACL Table

The ACL table includes the following parameters for each ACL:

Parameter	Description
ACL Number	The ACL number. ACL 1-99 are Standard ACLs. ACL 100-198 are Extended ACLs. ACL 199 is the default extended ACL that is pre-configured in the system, and is not attached to any interface. ACL 199 is reserved for QoS marking rules. You cannot configure Allow/Deny rules for ACL 199.

Parameter	Description
ACL Name	The name of the ACL. The default name is the ACL Number.
ACL Active State	The state of the ACL (Activate or Deactivate). The default is Deactivate. A new ACL can be created only with Active State Deactivated. Rule's parameters can be modified only if the state of the ACL is Deactivated. If ACL Applicable Interface is None, its state cannot be set to Activate (excluding ACL 199).
ACL Applicable Interface	The interface(s) to which the ACL applies: None, ASN-GW, All AU, ASN-GW & All AU. In Mini-Centralized ASN-GW only the None and ASN-GW options are applicable. In a Macro BTS operating in Centralized ASN-GW ASN Topology only the None and All AU options are applicable. The default is ASN-GW.

The ACL table section also includes the following buttons:

Button	Description
Add ACL	Adds a new ACL entry to the table.
Delete	Deletes the selected entry (or several selected entries) from the table. An ACL with Active State UP cannot be deleted.

IMPORTANT

The priority of checking for a match in active ACLs is applied with respect to the sequence in which these ACLs were attached to the relevant interface. The first found match is applied. To change the priorities of ACLs you need to de-attach them from the relevant interface(s) and then re-attach them in the required order.

7.5.2.3.2 ACL Parameters Section

The ACL Parameters section includes the ACL Parameters table and the ACL Parameters Editor. After you have created an ACL, you can configure Allow/Deny rules to be applied for traffic that meets certain criteria.

The ACL Parameters table displays the following read-only parameters for each existing ACL rule:

Parameter	Description
Rule Number	The ACL rule number. An auto-sequential number generated during creation of a new rule.

Parameter	Description
Rule Action	The rule action (Allow or Deny). Allow indicates that traffic matching the filter criteria is allowed to reach the ASN-GW and/or AUs. Deny indicates that traffic matching the filter criteria is dropped, and not allowed to reach the ASN-GW or AUs.

Select an entry to open the Rule Parameters Editor for the selected rule. A rule can be edited only when the Active State of the ACL is Deactivated.

The ACL Parameters table also includes the following buttons:

Button	Description
Add	Adds a new entry to the table and opens the Rule Parameters Editor, enabling configuration of parameters for the new rule. Rules can be added only if the Active State of the ACL is Up.
Delete	Deletes the selected entry (or several selected entries) from the table. Rules can be deleted only if the Active State of the ACL is Down.

The ACL Parameters Editor displays the following parameters for the rule selected in the ACL Parameters table:

Parameter	Description
Source IP Address	The source IP address to allow/deny traffic from. The address 0.0.0.0 means any address. The default is 0.0.0.0. In ACL 199 rules must be the IP address of the Bearer or External Management or Internal Management interface.
Source IP Mask	Not configurable for ACL 199. The mask for the source IP address, allowing to define a range of source addresses (subnet) from which to allow/deny traffic. The default is 255.255.255.255.
Minimum Source Port	Applicable only for an extended ACL.The minimum source port number of the application traffic from which to allow/deny traffic.The range is 1-65535. The default is 0.
Maximum Source Port	Applicable only for an extended ACL. Not applicable for ACL 199. The maximum source port number of the application traffic from which to allow/deny traffic.The range is 1-65535. The default is 65535.
Destination IP Address	Not applicable for ACL 199. The destination IP address to which to allow/deny traffic.The address 0.0.0.0 means any address. The default is 0.0.0.0.

Parameter	Description
Destination IP Mask	Not applicable for ACL 199. The mask for the destination IP address, allowing to define a range of source addresses (subnet) to which to allow/deny traffic. The default is 255.255.255.255.
Minimum Destination Port	Applicable only for an extended ACL.Not applicable for ACL 199. The minimum destination port to which to allow/deny traffic.The range is 1-65535. The default is 0.
Maximum Destination Port	Applicable only for an extended ACL.Not applicable for ACL 199. The maximum destination port to which to allow/deny traffic.The range is 1-65535. The default is 65535.
Protocol	Applicable only for an extended ACL. The transport protocol for which traffic is allowed/denied.The range is 1-255. 255 means any. The default is 255. In ACL 199 the valid values are 6 (TCP) and 17 (UDP).
Rule Action	The rule action (Allow or Drop). The default is Allow. Not applicable for ACL 199 where it is read-only, displaying QoS Mark.
Classifier ID	Applicable only for ACL 199. The marking classifier ID to be used for associating an action ID that defines the DSCP and/or Priority marking actions to be applied to traffic that meets the rule's parameters. A classifier ID cannot be associated with more than one rule. Refer to "QoS Marking Rules Tab" on page 157 for details on configuring marking classifiers and marking actions.

For each Standard ACL, a specific combination of all applicable parameters (Source IP Address, Source IP Mask, Destination IP Address, Destination IP Mask) cannot be defined in more than one rule.

For each Extended ACL, a specific combination of all applicable parameters (Source IP Address, Source IP Mask, Destination IP Address, Destination IP Mask, Minimum Source Port, maximum Source Port, Minimum Destination Port, Maximum Destination Port, Protocol) cannot be defined in more than one rule.

7.5.2.4 IP Routing Tab

The IP Routing tab is not applicable for Micro Outdoor BTSs.

The IP Routing tab enables viewing/modifying entries in the IP Routing table. It also enables adding/deleting static IP routes.

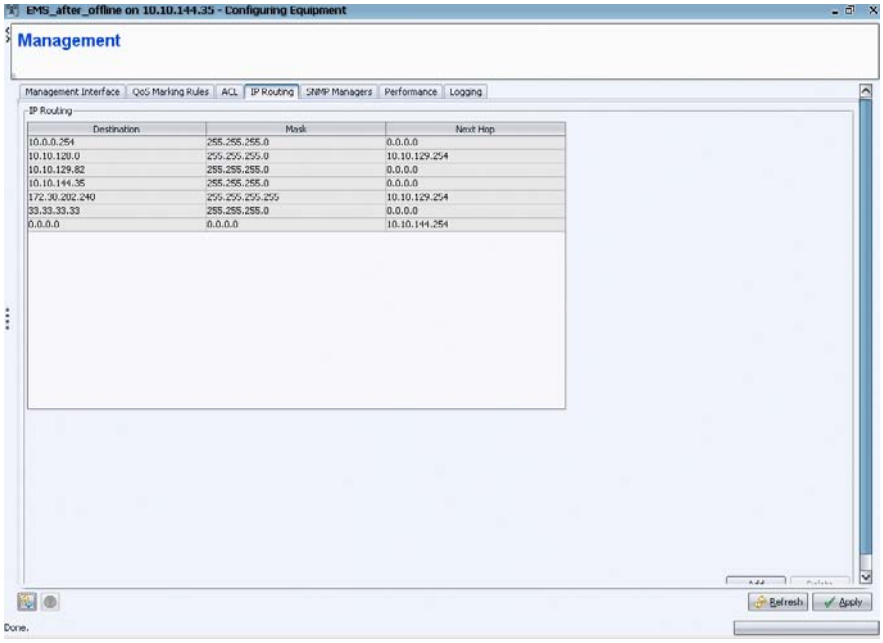


Figure 7-13: Management Page, IP Routing Tab

The IP Routing table includes the following parameters for each static route entry:

Parameter	Description
Destination	The destination host or network IP address for the route.
Mask	The net mask for the route.
Next Hop	The next hop IP address for the route. Must be in the same subnet with one of the NPU IP interfaces.

The IP Routing page also includes the following buttons:

Button	Description
Add	Adds a new entry to the IP Routing table, allowing you to configure a new IP Route parameters.
Delete	Deletes the selected entry (or several selected entries) from the IP Routing table.

There are automatically created entries with the IP addresses of the directly connected Bearer, External Management, Local Management and Internal Management interfaces (the IP address of the Internal Management interface is set to 10.0.0.254. This interface is not applicable for the Mini-Centralized ASN-GW).

The availability of certain interfaces depend on the connectivity mode. For these entries, the Mask is 255.255.255.0 and the Next Hop address is 0.0.0.0 (“any”). These entries cannot be modified or deleted by the user. They will be updated automatically following any change in the relevant IP Source Address of the IP interface.

Routes will be created automatically for each new SNMP Trap Manager (see “SNMP Managers Tab” on page 168), External Log TFTP Server (see “Logging Tab” on page 174), or SW Upgrade TFTP Server (see “Software Upgrade Task” on page 303). These entries will be updated/deleted upon modification/deletion of the relevant Server. The configuration of these entries is:

- Destination = Server's IP address
- Mask = 255.255.255.255
- Next Hop = External Management Next Hop IP address (see “External Management Interface” on page 154)

These entries will be changed automatically following any change in the External Management Next Hop IP address.

In addition, the default “Any Destination” entry with Destination 0.0.0.0 and Mask 0.0.0.0 may be created. The Next Hop IP address of this route must be in the same subnet with one of the NPU IP interfaces according to specific network topology and needs.

7.5.2.5 SNMP Managers Tab

The SNMP Managers tab enables managing the lists of Authorized SNMP Managers and SNMP Trap Managers.

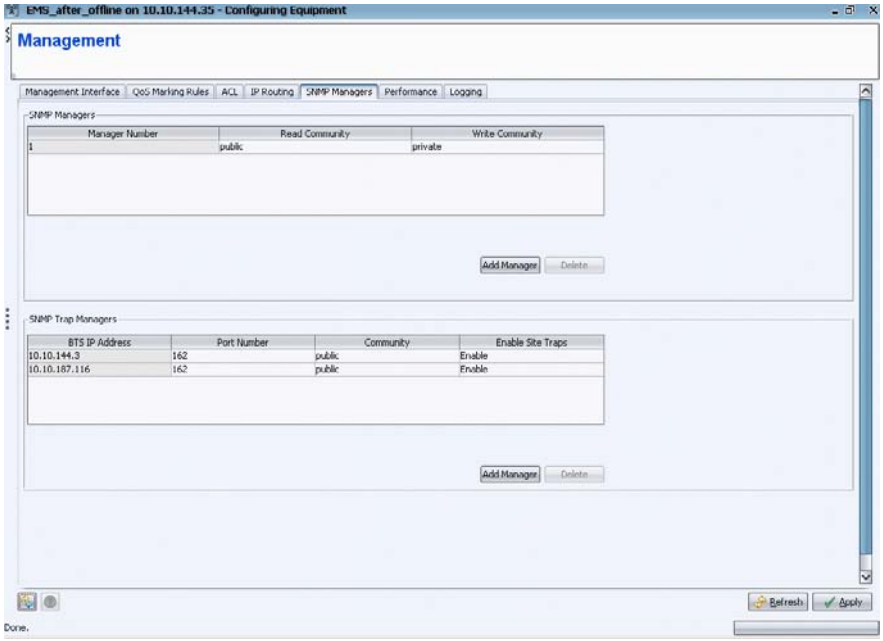


Figure 7-14: Management Page, SNMP Managers Tab

The SNMP Managers tab includes the following sections:

- "SNMP Managers"
- "SNMP Trap Managers"

7.5.2.5.1 SNMP Managers

An SNMP Manager comprises a pair of SNMP Communities (Read Community and Write Community). A management station is permitted to manage the BTS using SNMP only if it uses one of the configured SNMP Communities (or a pair of SNMP Communities). A maximum of five SNMP Managers can be configured. If the maximum number is reached, the Add Manager button becomes inactive.

The SNMP Managers table includes the following fields for each authorized SNMP Manager:

Parameter	Description
Manager Number	The index number of the SNMP Manager.
Read Community	The SNMP Read Community string allowing execution of SNMP Get operations. A string of 1 to 10 printable characters, case-sensitive. The default is public.

Parameter	Description
Write Community	The SNMP Write Community string allowing execution of SNMP Set and Get operations. A string of up to 10 printable characters, case-sensitive. The default is private.

The SNMP Managers section also includes the following buttons:

Button	Description
Add Manager	Adds a new entry to the SNMP Managers table.
Delete	Deletes one or several selected entries from the SNMP Managers table.

NOTE

The Read and Write Communities are mandatory and both must be defined (other than null). Duplication of Communities pairs is not allowed (each pair must be unique).

IMPORTANT

If you delete all SNMP Managers you will loose the ability to manage the site using SNMP.

7.5.2.5.2 SNMP Trap Managers

A maximum of five SNMP Trap Managers can be configured. If the maximum number is reached, the Add Manager button becomes inactive.

IMPORTANT

For proper management of the site such as getting notifications on configuration change events the network management server must be defined as a Trap Manager.

The SNMP Trap Managers table includes the following fields for each authorized SNMP Trap Manager:

Parameter	Description
IP Address	The IP address of the Trap Manager. Must be unique in the network (the same IP address cannot be assigned to more than one Trap Manager).I The default is 192.168.0.1.
Port Number	The port number on which the Trap Manager will listen for messages from the Agent. The range is from 1 to 65535. The port on which the management system listens for traps is 162.

Parameter	Description
Community	The name of the SNMP Read Community used by the Trap Manager. Traps are sent toward those Managers for which this parameter is configured. A string of up to 10 printable characters, case-sensitive. The default is public.
Enable Site Traps	Indicates whether the sending of traps to the management station is enabled or disabled. The default is Enable.

The SNMP Trap Managers section also includes the following buttons:

Button	Description
Add Manager	Adds a new entry to the SNMP Trap Managers table.
Delete	Deletes one or several selected entries from the SNMP Trap Managers table.

NOTE

For each SNMP Trap Manager a route is automatically created in the IP Routing Table (see "IP Routing Tab" on page 166). Following any change in the table (Add/Delete/Modify) the IP Routing Table is updated according to the change.

7.5.2.6 Performance Tab

The Performance tab allows enabling/disabling collection and storage of performance data.

For details on collection and storage of counters, supported counters groups and the counters in each group, refer to the Performance Management document.

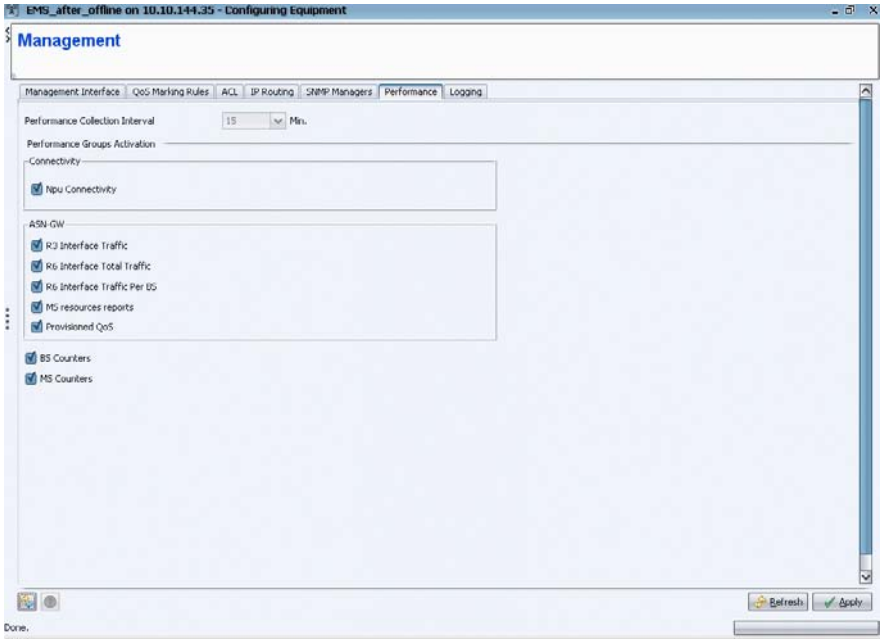


Figure 7-15: Management Page, Performance Tab

The Performance tab includes the following components:

Parameter	Description
Performance Group Activation	A list of counters groups as detailed below with a check box next to each group's name. Select a check box to enable collection and storage of performance data for the counters group. The default is enable collection (checked) for all groups. Enabling/disabling of a group shall take effect at the managed object starting at the beginning of the next aggregation period (15 minutes). The data of parameters of "disabled collection" groups will not be included in the file generated at the end of the aggregation period during which collection was disabled.

The Performance page includes the following sections:

- "Connectivity"
- "ASN-GW (not applicable for Micro Outdoor BTS)"
- "BS Counter"
- "MS Counters"

7.5.2.6.1 Connectivity

Main Counters Group	Counters Included	Applicable for...
NPU Connectivity	NPU Backhaul Port	Macro Indoor/Outdoor BTS and Mini Centralized ASN-GW
	NPU Cascade Port	Macro Indoor BTS and Mini Centralized ASN-GW
	NPU Internal Management Interface	Macro Indoor BTS
	NPU External Management Interface	Macro Indoor/Outdoor BTS and Mini Centralized ASN-GW
	NPU Bearer Interface	Macro Indoor/Outdoor BTS and Mini Centralized ASN-GW

7.5.2.6.2 ASN-GW (not applicable for Micro Outdoor BTS)

Main Counters Group	Counters Included	Applicable for...
R3 Interface Traffic	R3 Interface	Macro Indoor/Outdoor BTS and Mini Centralized ASN-GW
R6 Interface Total Traffic	R6 Interface Total	Macro Indoor/Outdoor BTS and Mini Centralized ASN-GW
R6 Interface Traffic Per BS	R6 Interface BS	Macro Indoor/Outdoor BTS and Mini Centralized ASN-GW
MS Resources Reports	Management-Initial NE	Macro Indoor/Outdoor BTS and Mini Centralized ASN-GW
	Load Balancing	Macro Indoor/Outdoor BTS
Provisioned QoS	Management-Provisioned QoS	Macro Indoor/Outdoor BTS and Mini Centralized ASN-GW

7.5.2.6.3 BS Counter

Main Counters Group	Counters Included	Applicable for...
BS Counters	Traffic	Macro Indoor/Outdoor BTS and Micro Outdoor BTS
	Utilization	Macro Indoor/Outdoor BTS and Micro Outdoor BTS
	TxR1 Total Traffic	Macro Indoor/Outdoor BTS and Micro Outdoor BTS
	RxR1 Total Traffic	Macro Indoor/Outdoor BTS and Micro Outdoor BTS
	BS General	Macro Indoor/Outdoor BTS and Micro Outdoor BTS
	Integrity	Macro Indoor/Outdoor BTS and Micro Outdoor BTS

7.5.2.6.4 MS Counters

Main Counters Group	Counters Included	Applicable for...
MS Counters	MS Basic	Macro Indoor/Outdoor BTS and Micro Outdoor BTS

7.5.2.7 Logging Tab

The Logging tab is not applicable for Micro Outdoor BTS.

The Logging tab enables defining various logging parameters, including the minimum severity level for which an event generates a log entry.

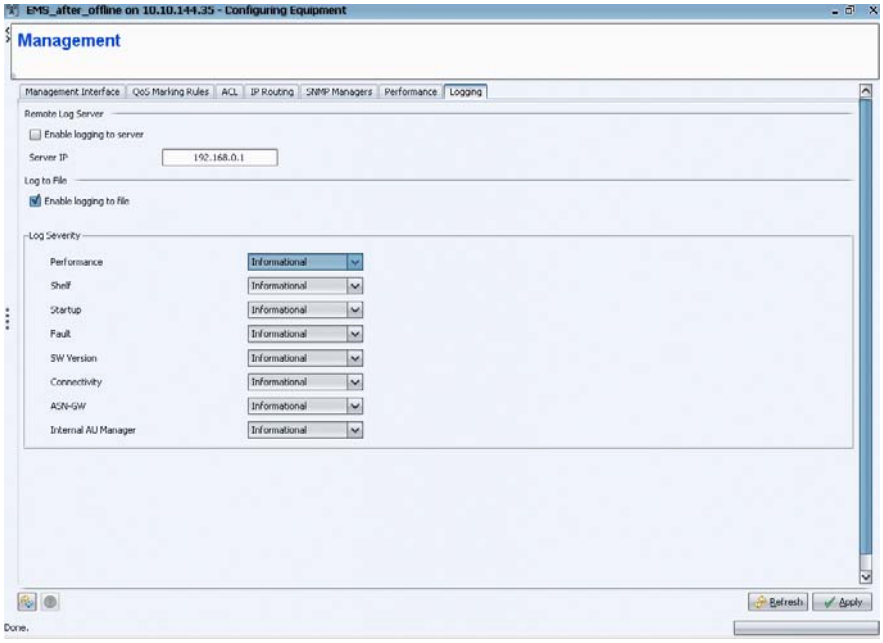


Figure 7-16: Management Page, Logging Tab

The Logging tab includes the following parameters:

Parameter	Description
Remote Log Server	
Enable logging to server	Indicates whether or not logging to the server is enabled. If enabled, the server IP address is indicated in the Server IP text box. The default is Disable (unchecked).
Server IP	The server IP address of the server on which logs are to be maintained. If logging to server is enabled, the Server IP cannot be changed. The default is 192.168.0.1.

Parameter	Description
Log to File	
Enable logging to file	Indicates whether or not logging to file is enabled. The default is Enable (checked).

NOTE

A route for the Log File Server is automatically created in the IP Routing Table (see "IP Routing Tab" on page 166). Following any change in the Log File Server (Enable/Disable/Modify Server IP) the IP Routing Table is updated according to the change.

In addition, in the Logging Severity section, you can disable logging to file or set the minimum severity level that generates a log entry for each of the following types of events:

Parameter	Description
SW Version	Software upgrade procedures.
Fault	Fault management procedures.
Performance	Performance management procedures.
Shelf	Shelf management procedures.
Startup	System startup procedures.
Connectivity	Connectivity procedures.
ASN-GW	ASN-GW procedures (applicable only in Distributed ASN-GW mode).
Internal AU Manager	Internal processes used for managing the AUs (not applicable for Mini-Centralized ASN-GW).

The available minimum severity options are:

- Disable (no logging)
- Emergency
- Alert
- Critical
- Error
- Warning

- Notice
- Informational

The default for all event types is Error.

7.5.3 ASN-GW Bearer Interface Page

The ASN-GW Bearer Interface page is applicable for Macro BTS operating in Distributed ASN-GW ASN Topology and for Mini-Centralized ASN-GW.

The ASN-GW Bearer Interface page enables managing the parameters of the Bearer IP Interface that enables connectivity between ASN-GW and BSs, AAA server and Home Agent.

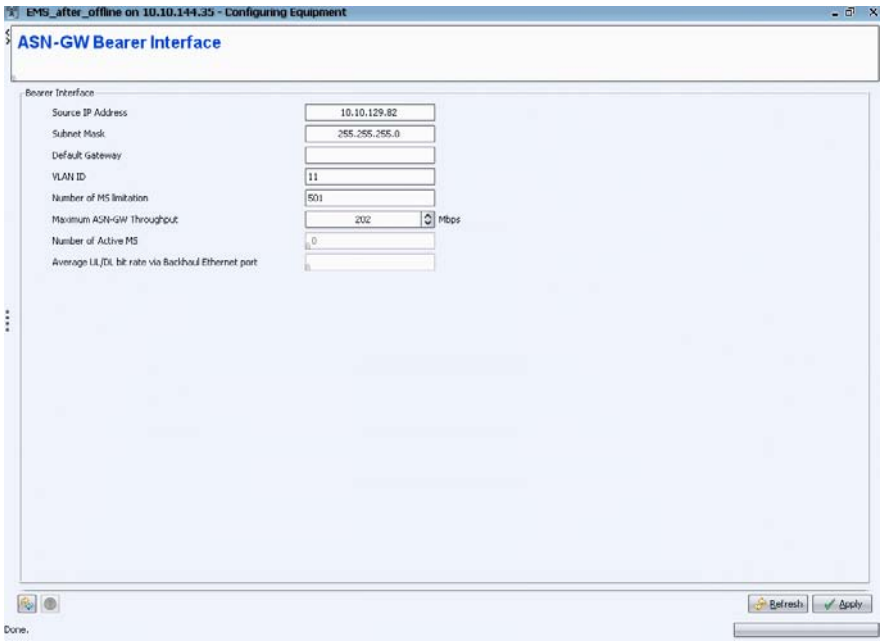


Figure 7-17: ASN-GW Bearer Interface Page

The ASN-GW Bearer Interface page includes the following parameters:

Parameter	Description
Source IP Address	The IP address of the interface. The default is 172.16.0.1. A change in this parameter will affect all entries in the IP Routing table using the Bearer Interface Source IP Address as the Destination. For details refer to "Effects of Changes in IP Interface's Parameters" on page 155.

Parameter	Description
Subnet MAsk	The IP subnet mask of the interface. The default is 255.255.255.0.
Default Gateway	The Default Gateway for the Bearer interface. Note: Any change of this parameter will affect all entries in the IP Routing table using the Bearer Interface Default Gateway as the Next Hop address. For details refer to "Effects of Changes in IP Interface's Parameters" on page 155.
VLAN ID	The VLAN ID of bearer traffic. The range is 11-100, 110-4094. The default is 11. If the value is other than the default (11) it will be indicated in the Backhaul VLAN Translation table (see "Backhaul VLAN Translation" on page 151).
Number of MS limitation	The maximum number of active MSs that can be served by the device. If this number is reached and a new MS attempts network entry, it will be rejected and a suitable "no resource" alarm will be generated. The range is from 1 to 3000. The default is 500.
Maximum ASN-GW Throughput	The maximum throughput in Mbps that can be provided by the device. If this number is reached and a new MS attempts network entry, it will be rejected and a suitable "no resource" alarm will be generated. The range is from 1 to 500 Mbps. The default is 200 Mbps.
Number of Active MS	Read-only. The current number of active MSs served by the device.
Average UL+DL bit rate via Backhaul Ethernet port.	Read-only. The current average throughput provided by the device. Note: Not supported in current release

IMPORTANT

The Bearer interface IP address is used also in other interfaces such as the ASN and CSN interfaces. If you change the Bearer interface Source IP address, you must reboot the NPU to apply changed IP address on these interfaces.

7.5.4 ASN-GW Pools Page

The ASN-GW Pools page is not applicable for Mini-Centralized ASN-GW.

The ASN-GW pools are part of the optional Load Balancing feature. The Load Balancing feature provides a WiMAX operator with the capability to build resilient ASN infrastructure using ASN-GW redundancy. Every BS is provisioned with a list of redundant ASN-GWs (pool). The BS applies round-robin mechanism in order to pick an Authenticator for each MS that performs initial network entry. This should eventually distribute the load between Anchor ASN-GWs. Geographical site backup can be achieved by using different priority of ASN-GW pools.

At the unit (NPU) level, up to two pools (with different priorities), each with up to 10 ASN-GWs, can be defined. Each BS defined in the unit will "inherit" these pools. It should be noted the ASN-GW defined in the BS as the Default Authenticator (see "R6/R8 Bearer Interface Page-Bearer Tab" on page 272) will be automatically included in the list of ASN-GWs in the Primary Pool (although it will not be shown as one of the ASN-GWs in the pool).

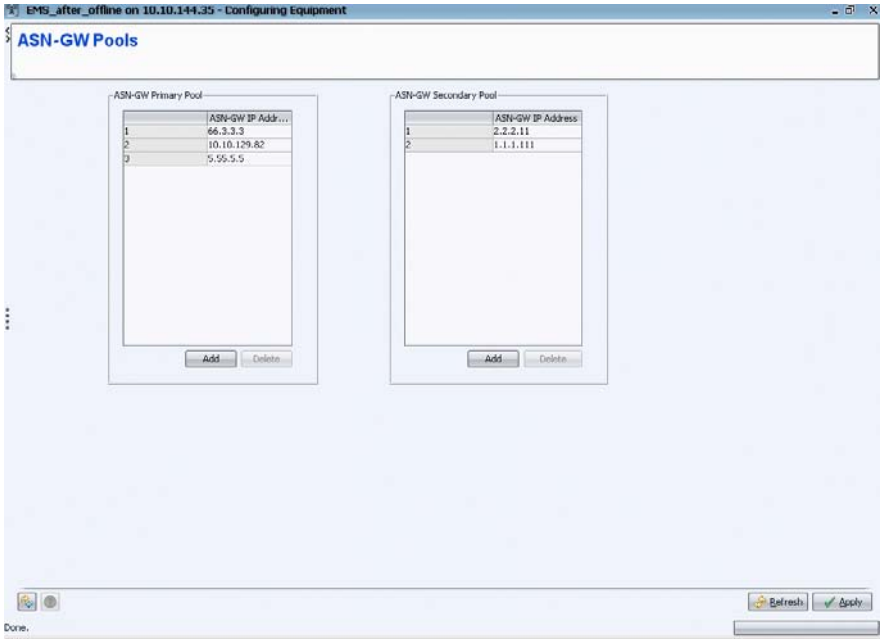


Figure 7-18: ASN-GW Pools Page

The ASN-GW Pools page includes two tables for the ASN-GW Primary and Secondary Pools. Each Pool can contain up to 10 ASN-GW IP Addresses. Use the Add/Delete buttons below each table to add/delete entries to/from the table. IP addresses must be unique in the tables: An IP address that exists in one of the tables cannot be added to either the same or the other table.

Note that you cannot populate the Secondary Pool if the Primary Pool is empty.

7.5.5 Keep Alive Page

The Keep Alive page enables viewing/modifying the parameters of the keep-alive mechanism between the ASN-GW and relevant BSs and between each BS and the relevant ASN-GWs.

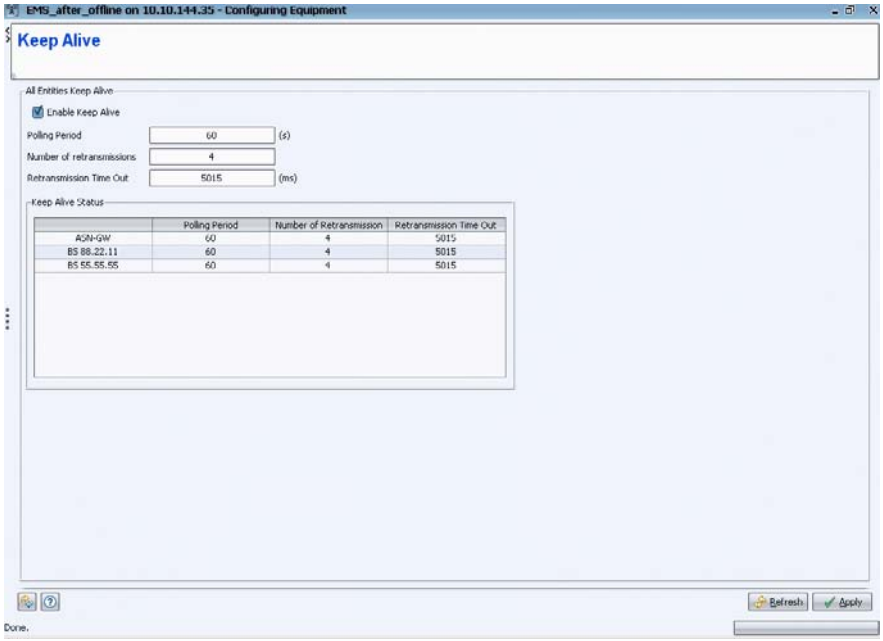


Figure 7-19: Keep Alive Page, Macro Indoor/Outdoor BTS

In a Macro Indoor/Outdoor BTS operating in Distributed ASN-GW ASN Topology the keep-alive mechanism is applicable for the internal ASN-GW and for each of the defined BSs.

In a Macro Indoor/Outdoor BTS operating in Centralized ASN-GW ASN Topology the keep-alive mechanism is applicable for each of the defined BSs.

In a Mini-Centralized ASN-GW the keep-alive mechanism is applicable for the ASN-GW entity.

In a Micro Outdoor BTS the keep-alive mechanism is applicable for the defined BS.

The Keep Alive page allows simultaneously configuring the following parameters with the same values for all relevant entities:

Parameter	Description
Enable Keep Alive	Use the check-box to enable/disable the keep-alive mechanism for all relevant entities of the managed device. The default is Disable (unchecked). The following parameters are applicable only if Keep Alive is enabled (checked).

Parameter	Description
Polling Period	The period in seconds between polling sessions. The range is from 10 to 1000 seconds. The default is 60 seconds. Polling Period x 1000 (value in milliseconds) cannot be lower than Retransmission Timeout x (Number of Retransmissions+1)
Number of Retransmissions	Maximum number of retries if Retransmission Timeout has expired without getting a response. The range is from 0 to 10. The default is 5.
Retransmission Timeout	Time in milliseconds to wait for a response before initiating another polling attempt or reaching a decision that the polled entity has failed (if the maximum number of retries set by Number of Retransmissions has been reached). The range is from 5000 to 10000 milliseconds (0.1 to 10 second). The default is 5000.

In addition, the Keep Alive Status table (not applicable for Micro Outdoor BTS) displays the current values of the Polling Period, Number of Retransmissions and Retransmission Timeout for each of the relevant entities.

7.6 Equipment

The Equipment node includes two sub-nodes:

- "Shelf"
- "External"

7.6.1 Shelf

The Shelf sub-node enables access to the following pages:

- "Power Supply Page" (applicable only for Macro Indoor BTS)
- "NPU Page" (not applicable for Micro Outdoor BTS)
- "AU" Node (not applicable for Mini-Centralized ASN-GW), with "AU <Type and Slot #> Page" for each of the existing (created) AU entities.

7.6.1.1 Power Supply Page

The Power Supply page is applicable only for Macro Indoor BTS.

The Power Supply page enables viewing/defining the properties of required PIU and PSU cards and viewing the properties of installed cards.

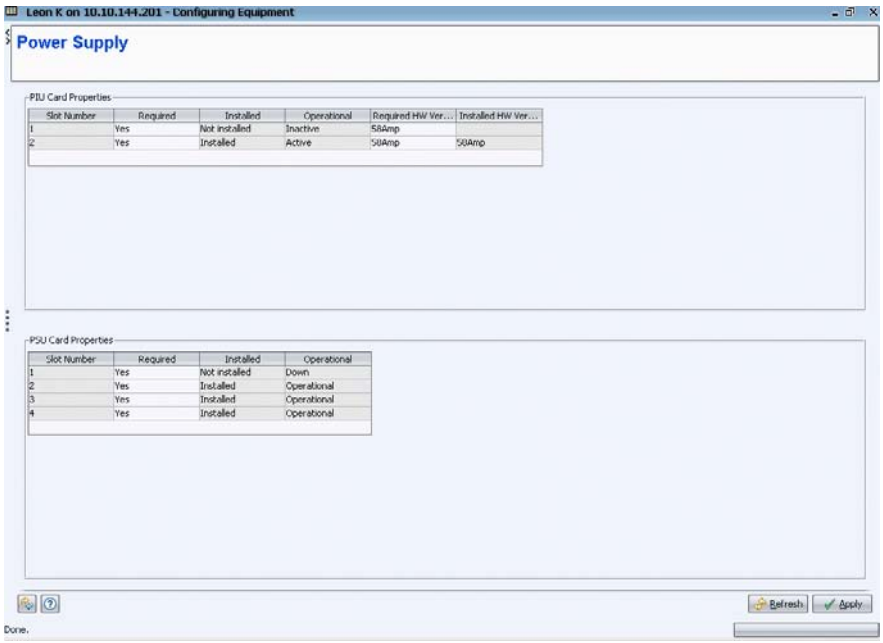


Figure 7-20: Power Supply Page

The Power Supply page includes the following sections:

- "PIU Card Properties"
- "PSU Card Properties"

7.6.1.1.1 PIU Card Properties

The PIU Card Properties table includes the following parameters for each PIU card slot:

Parameter	Description
Slot Number	Read-only. The number of the slot allocated to the PIU card (1-2).
Required	Indicates whether the PIU card is required in the specific slot. Double-click on the entry to open a selection drop-down menu displaying the available options (Yes/No). The default is Yes.
Installed	Read-only. The status of the PIU card installation (Installed or Not installed).
Operational	Read-only. The operational status of the PIU card (Active or Inactive).

Parameter	Description
Required HW Version	The required current supply capability of the card. Double-click on the entry to open a selection drop-down menu displaying the available options (58Amp, 35Amp). The default is 58Amp.
Installed HW Version	Read-only. The current supply capability of the installed card (empty for a PIU that is not installed).

7.6.1.1.2 PSU Card Properties

The PSU Card Properties table includes the following parameters for each PSU card slot:

Parameter	Description
Slot Number	Read-only. The number of slot allocated to the PSU card (1-4).
Required	Indicates whether the PSU card is required in the specified slot. Double-click on the entry to open a selection drop-down menu displaying the available options (Yes/No). The default is Yes.
Installed	Read-only. The status of the PSU card installation (Installed or Not installed).
Operational	Read-only. The operational status of the PSU card (Operational or Down).

7.6.1.2 NPU Page

The NPU page is not applicable for Micro Outdoor BTS.

The NPU page displays the properties of the NPU card and enables control of the card and configuration of the time for automatic scheduling of the configuration backup.

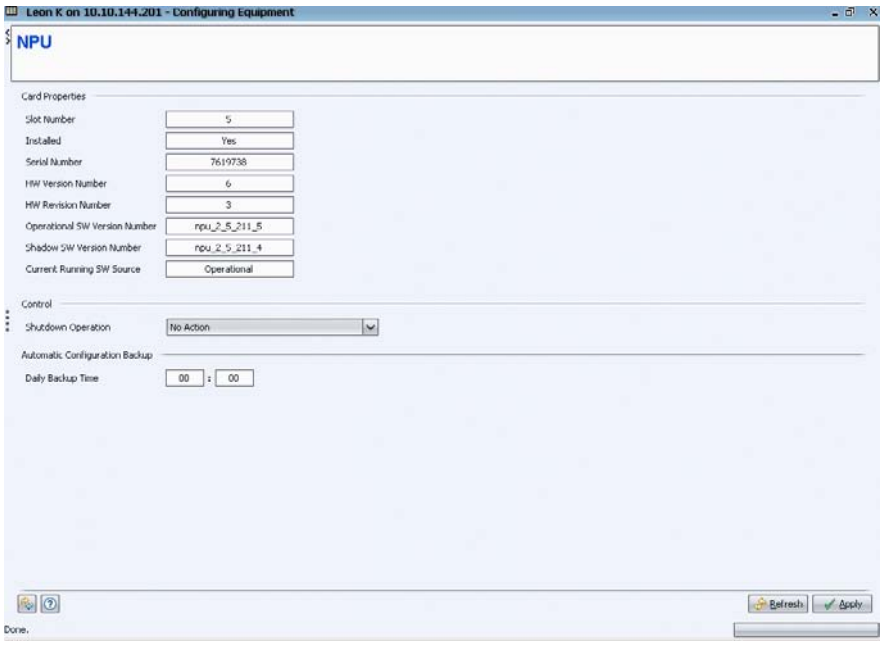


Figure 7-21: NPU Page

The NPU page includes the following:

- "Card Properties"
- "Control"
- "Automatic Configuration Backup"

7.6.1.2.1 Card Properties

The Card Properties section includes the following read-only parameters of the NPU card.

Parameter	Description
Slot Number	The number of the slot allocated to the NPU card. In current release the NPU can be installed only in slot 5.
Installed	The status of the NPU card installation. Must be Yes.
Serial Number	The serial number of the NPU card.
HW Version Number	The hardware version of the NPU card.
HW Revision Number	The hardware revision number.

Parameter	Description
Operational SW Version Number	The version of the default software image used for rebooting the NPU after system reset.
Shadow SW Version Number	The version of the downloaded software image that can be used to boot up the NPU.
Current Running SW Source	The software that is currently running on the system (Operational or Shadow).

Refer to "Software Upgrade Task" on page 303 for details on loading a new SW version and managing the SW versions.

7.6.1.2.2 Control

The Control section enables defining the action to be taken for a Shutdown or Reset Operation:

Option	Description
Shutdown	The shutdown operation will shut down the entire site. **IMPORTANT:** The system cannot be re-activated from remote. To re-activate the system, turn off the power to the PIU(s) and then turn it on again.
Reset	The site will be restarted. All changes in parameters that require reset will take effect after restart.
Reset To Factory	The system will be restarted with factory default configuration. **IMPORTANT:** All configurations will be deleted. This also means loosing the ability to manage the unit from remote: Local configuration of specific mandatory parameters using CLI is required to enable remote management of the site using the management system. Refer to the "Enabling Discovery" on page 1 for details.

Option	Description
Reset To Factory With Connectivity	The system will be restarted with factory default configuration, except to parameters that are required to maintain management connectivity to the unit. The parameters that are maintained without any change include: ■ Physical interfaces (MGMT, CSCD, DATA) configurations ■ IP interfaces (local management, external management, bearer) configurations ■ IP route configurations ■ SNMP Managers configurations ■ Trap Managers configurations ■ AU software mapping (not applicable for Mini-Centralized ASN-GW) ■ Site ID
No Action	The default option-no reset or shutdown operation.

7.6.1.2.3 Automatic Configuration Backup

The daily scheduled time for the automatic configuration backup is indicated in the Daily Backup Time text boxes in the Automatic Configuration Backup section.

The format is hh:mm where hh = 00 to 23, mm = 00 to 59. The default is 00:00.

7.6.1.3 AU

Not applicable for a Mini-Centralized ASN-GW.

From the navigation tree of a managed Macro Indoor/Outdoor BTS you can create new AU entities or delete an existing AU entity (refer to "Creating/Deleting an AU").

The AU node includes an "AU <Type and Slot #> Page" for each created AU. In a Micro Outdoor BTS there is always a single object (Micro ODU Slot 1), representing the entire BTS.

7.6.1.3.1 Creating/Deleting an AU

AU object creation/deletion is applicable only for Macro Indoor/Outdoor BTS. In a Micro Outdoor BTS the AU object is created automatically and cannot be deleted.

To create a new AU:

1 Right-click the AU sub-node in the navigation tree and select Create to open the New AU window. You can also double-click on an empty module in the Equipment View Page (see "Chassis View (Macro Indoor BTS)" on page 135 or "Components View (Macro Outdoor BTS)" on page 136) to open the New AU window for the selected slot.

See table below for mapping of Outdoor Macro BTS AUs to slot numbers:

Table 7-4: Mapping of Outdoor Macro BTS AUs to Slot #

AU	Slot #
AU of NAU	7
SAU	1
Master AU of DAU 1 (left side of DAU 1)	3
Slave AU of DAU 1 (right side of DAU 1)	2
Master AU of DAU 2 (left side of DAU 2)	9
Slave AU of DAU 2 (right side of DAU 2)	8

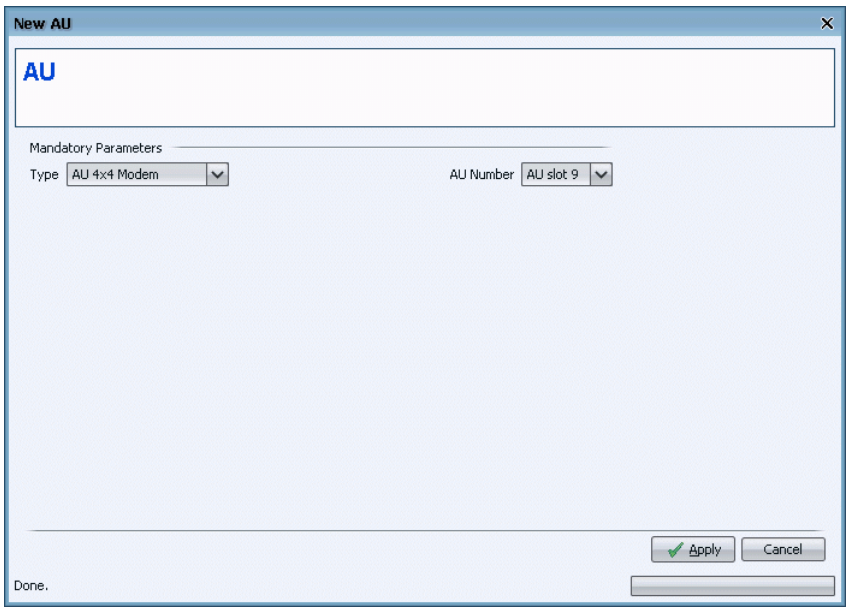


Figure 7-22: New AU Window

2 Configure the mandatory properties of the required AU in the New AU window:

Parameter	Description
Type	The required AU type: In a Macro Indoor BTS only AU 4x4 Modem is applicable. In a Macro Outdoor BTS the applicable options are AU 4x4 Modem for a 4-channels AU and AU 2x2 Modem for a 2-channels AU. The default is AU 4x4 Modem.
AU Number	Select the required slot number. The available options include all currently "empty" slots (AU entity does not exist). The default is the first available empty slot. The AU Number is read-only if the New AU window was opened by double-clicking on an empty module in the Equipment View page.

3 Click Apply to complete the new AU creation. The new AU will be added to the list of AU Slot # available in the AU sub-node.

To delete an AU:

To delete an AU, right-click the required AU Slot # entry in the navigation tree and select Delete. You will be request to confirm the operation.

IMPORTANT

An associated AU (specified in a Site Sector Association) cannot be deleted. For more details refer to "Site Sector <#> Page" on page 279.

7.6.1.3.2 AU <Type and Slot #> Page

The AU node includes an AU <Type and Slot #> page for each created AU. In a Micro Outdoor BTS there is always a single object (Micro ODU Slot 1), representing the entire BTS.

For details on creation/deletion of AU entities refer to "Creating/Deleting an AU" on page 186.

The AU <Type and Slot #> page includes the following tabs:

- "AU Card Properties Tab"
- "AU Control Tab"

7.6.1.3.2.1 AU Card Properties Tab

The Card Properties tab displays configuration and status information for the AU module.

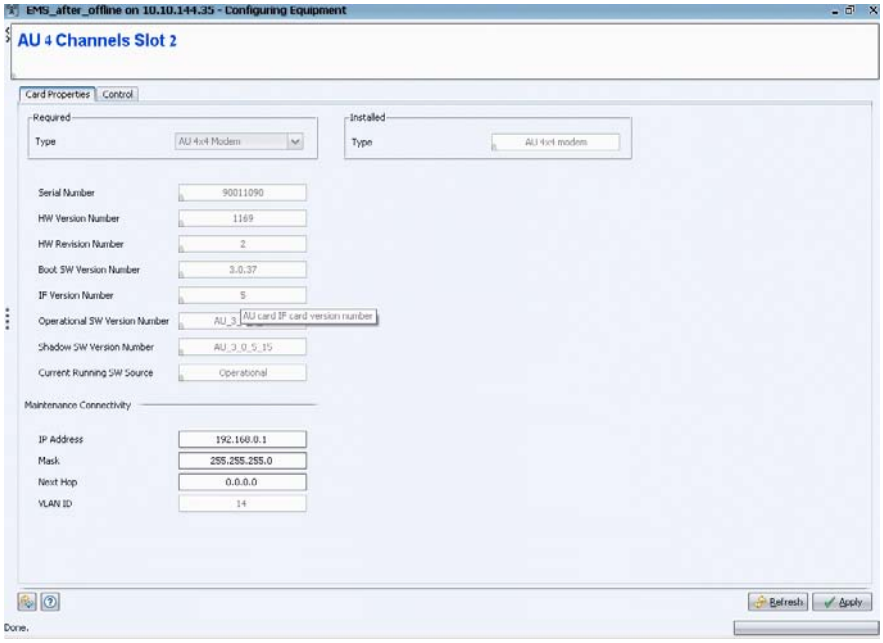


Figure 7-23: AU <Type and Slot #> Page - Card Properties Tab (Macro BTS)

The AU Card Properties tab includes the following sections:

- "Required and Installed"
- "General Properties"
- "Maintenance Connectivity"

7.6.1.3.2.1.1 Required and Installed

The Required section enables viewing/editing the required properties of the AU module that should be installed in the slot:

Parameter	Description
Type	The required AU type: In a Macro Indoor BTS only AU 4x4 Modem is applicable. In a Macro Outdoor BTS the applicable options are AU 4x4 Modem for a 4-channels AU and AU 2x2 Modem for a 2-channels AU. In a Micro Outdoor BTS only Micro ODU is applicable.

The Installed section displays read-only information about the actual Type of the Installed module (or AU not detected).

7.6.1.3.2.1.2 General Properties

The following read-only AU properties are displayed:

Parameter	Description
Serial Number	The serial number of the AU.
HW Version Number	The hardware version of the AU.
HW Revision Number	The hardware revision number.
Boot SW Version Number	The boot software version.
FPGA Version Number	Applicable only for Micro Outdoor BTS. The FPGA version number.
IF Version Number	Applicable only for Macro Indoor/Outdoor BTS. The IF version number.
IF Revision Number	Applicable only for Macro Indoor/Outdoor BTS. The IF revision number.
Operational SW Version Number	The version of the default software image used for rebooting the AU after system reset.
Shadow SW Version Number	The version of the downloaded software image that can be used to boot up the AU.
Current Running SW source	The software that is currently running on the card (operational or shadow).

Refer to “Software Upgrade Task” on page 303 for details on loading a new SW version and managing the SW versions.

7.6.1.3.2.1.3 Maintenance Connectivity

The Maintenance Connectivity section enables viewing/configuring the parameters of the service interface used by the AU for uploading maintenance information to an external server.

The Maintenance Connectivity section includes the following parameters:

Parameter	Description
IP Address	The IP address of the service interface. Must be unique in the network. The default is 192.168.0.1.
Mask	The subnet mask of the service interface. The default is 255.255.255.0
Next Hop	The IP address of the service interface's default gateway. In Macro Indoor/Outdoor BTS the default is 0.0.0.0 (none) In Micro Outdoor BTS Next Hop is read-only and is set to the IP address of bearer interface's Default Gateway (see "ASN-GW Bearer Interface Page" on page 176).
VLAN ID	The VLAN ID of the service interface. In Macro Indoor/Outdoor BTS is read-only. The same VLAN ID is used by all service interfaces, and is configured in the L1/L2 Connectivity page (seer "AU Maintenance VLAN ID" on page 150). In Micro Outdoor BTS the range is 1-9, 11-100, 110-4094 and 4096 for No VLAN. The default is 14.

7.6.1.3.2.2 AU Control Tab

The Control tab lists the parameters that enable controlling operation of the AU.

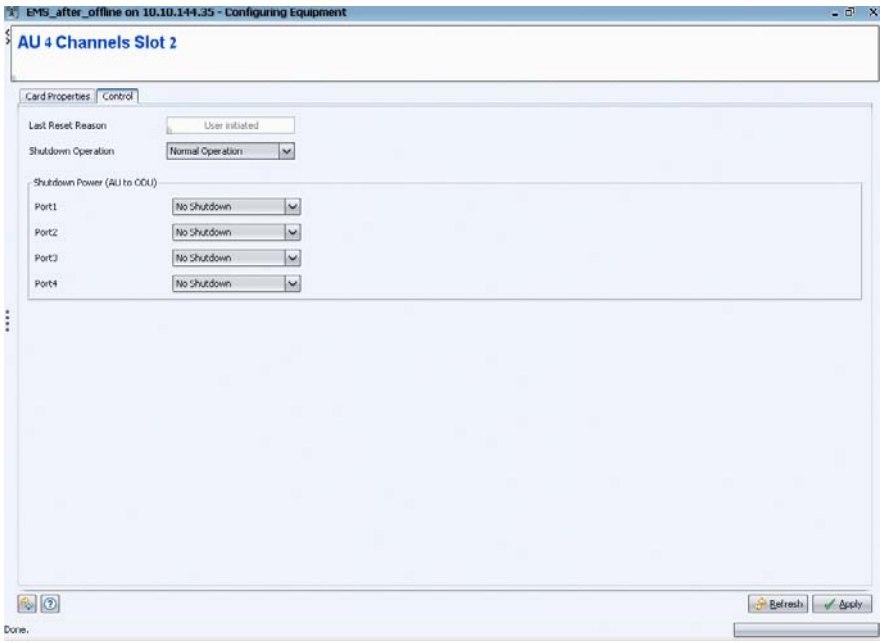


Figure 7-24: AU Slot Page - Control Tab

The Control tab includes the following options:

Parameter	Description
Last Reset Reason	Read-only. The reason for the last reset of the AU. Possible reasons include Unknown, Health Monitoring Failed, User Initiated. Configuration Failure, Internal Errors.
Shutdown Operation	Not applicable for Micro Outdoor BTS. The type of operation to be performed: Normal Operation, Shutdown [disable power to card] or Reset. The default is Normal Operation.

The **Shutdown Power (AU to ODU/Radio)** section (ODU in a Macro BTS, Radio in a Micro Outdoor BTS) enables control of the power from each port. It also enables controlling the operation of each port by disabling transmission (receive only mode). The available options for each of the available ports (1-4 in Macro Indoor BTS and a 4-Channels AU in Macro Outdoor BTS, 1-2 in Micro Outdoor BTS and a 2-Channels AU in Macro Outdoor BTS) are Shutdown, Rx Only or No Shutdown (normal operation). The default is No Shutdown.

7.6.2 External

The Equipment node includes the following pages:

- ODU Node (applicable only for a Macro Indoor/Outdoor BTS), with "ODU <#> Page" for each of the existing (created) ODU entities.
- Radio Node (applicable only for a Micro Outdoor BTS), with "Radio" page for the two radios of the BTS.
- "GPS Page"
- "Power Feeder Page" (Applicable only for Macro Indoor BTS)
- "Antenna Page" (Applicable for Macro Indoor/Outdoor BTS and Micro Indoor BTS)

7.6.2.1 ODU

Applicable only for a Macro Indoor/Outdoor BTS.

From the navigation tree for a Macro Indoor/Outdoor BTS you can create new ODU entities or delete an existing ODU entity (see "Creating/Deleting an ODU" below).

The ODU node includes an "ODU <#> Page" for each created ODU.

7.6.2.1.1 Creating/Deleting an ODU

ODU object creation/deletion is applicable only for Macro Indoor/Outdoor BTS. In a Micro Outdoor BTS two Radio objects are created automatically and cannot be deleted.

To create a new ODU:

1 Right-click the ODU sub-node in the navigation tree and select Create to open the New ODU window.

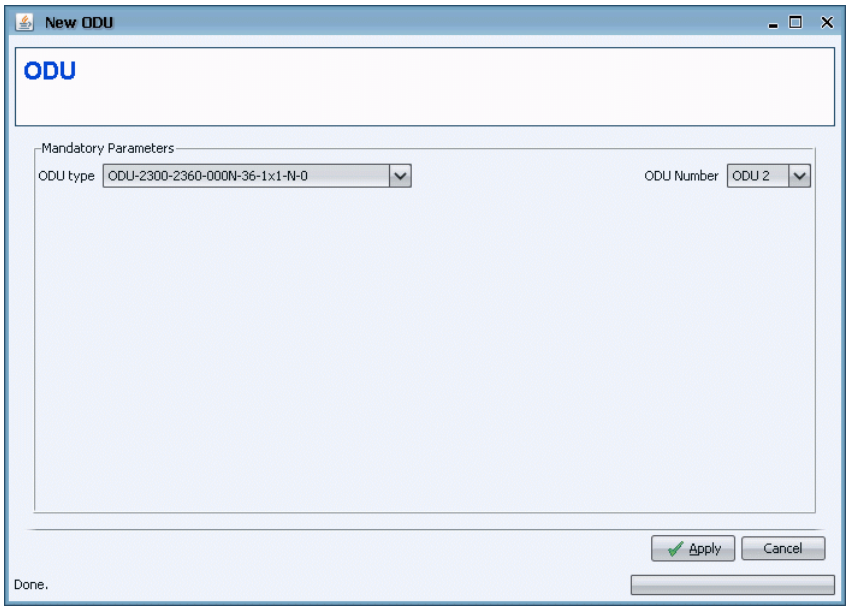


Figure 7-25: New ODU Window

2 In the New ODU window, select from the drop-down menus the required ODU Type and the ODU Number to be assigned to it (only unassigned numbers are available for selection). For Indoor BTS ODU numbers range is 1 to 28. For an Outdoor BTS ODU number range is from 1 to 24.

3 Click Apply to complete the new ODU creation. The new ODU will be added to the list of ODU # available in the ODU sub-node. To fully complete the creation of the ODU you should update the Ports Configuration (if necessary) and click Apply in the ODU page (see "ODU <#> Page" on page 194).

To delete an ODU:

To delete an ODU, right-click the required ODU # entry in the navigation tree and select Delete. You will be request to confirm the operation.

IMPORTANT

An associated ODU (specified in a Site Sector Association) cannot be deleted. For more details refer to "Site Sector <#> Page" on page 279.

7.6.2.1.2 ODU <#> Page

The ODU node includes an ODU <#> page for each created ODU.

The ODU <#> page displays the properties of the respective ODU.

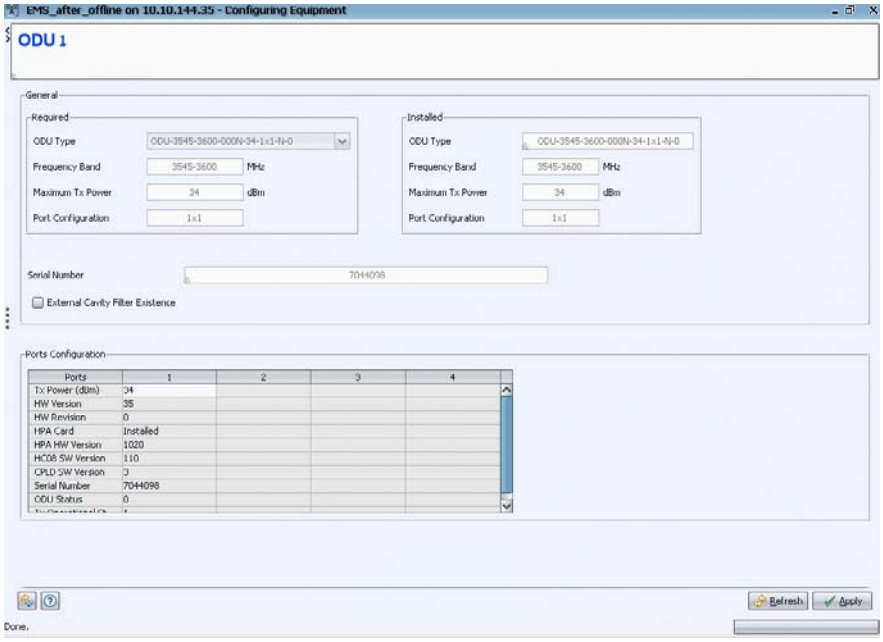


Figure 7-26: ODU Page

The ODU page includes the following sections:

- "General"
- "Ports"

7.6.2.1.2.1 General

The General section is divided into sub-sections.

The Required section enables viewing/editing the required Type of the ODU. It also provide read-only properties of the ODU based on the required type:

Parameter	Description
ODU Type	The required ODU type. The required ODU Type of an associated ODU cannot be modified. The Type of an ODU that is not associated to any sector can be updated using the drop-down menu that includes a list of currently available ODU Types.
Frequency Band	Read-only. The frequency band supported by the required ODU Type, in MHz.
Maximum Tx Power	Read-only. The maximum Tx power available for the required ODU Type, in dBm.
Port Configuration	Read-only. The Port Configuration of the required ODU Type (1x1, 2x2, or 4x2).

The Installed section displays read-only information about the actual Type and the properties of the actual ODU Type. These details are available only for an existing and connected ODU that is associated to a sector:

Parameter	Description
ODU Type	The installed ODU type (or ODU not Associated to sector).
Frequency Band	The frequency band supported by the installed ODU Type, in MHz.
Maximum Tx Power	The maximum Tx power available for the installed ODU Type, in dBm.
Port Configuration	The Port Configuration of the installed ODU Type (1x1, 2x2, or 4x2).

In addition, the following ODU general properties are displayed below the Required and Installed sections:

Parameter	Description
Serial Number	Read-only. The serial number of the ODU enclosure.
External Cavity Filter Existence	Check to indicate the existence of an external cavity filter. The default is no (unchecked).

7.6.2.1.2.2 Ports

The Ports section includes parameters for each of the ports supported by the ODU.

The Ports table includes the following parameters for each ODU port:

Parameter	Description
Tx Power (dBm)	The required Tx power at the specified ODU Port, in dBm. Applicable only for Tx/Rx ports: Port 1 in a 1x1 ODU, Ports 1 and 2 in a 2x2 ODU, Ports 1 and 3 in a 4x2 ODU. The actually available range depends on ODU Type: The upper limit, which is the default, is set by the Maximum Tx Power supported by the ODU. The control range is 10dBm.
HW version	Read-only. The hardware version of the ODU card connected to this port. Applicable only for an installed and associated ODU.
HW revision	Read-only. The hardware revision of the ODU card connected to this port. Applicable only for an installed and associated ODU.
HPA Card	Read-only. Indicates whether the port is connected to an HPA card (installed/not installed).
HPA HW Version	Read-only. The hardware version of the HPA connected to this port. Applicable only if an HPA card exists in an installed and associated ODU.
HC08 SW Version	Read-only. The software version of the HCO8 controlling card connected to this port. Applicable only for an installed and associated ODU.
CPLD SW Version	Read-only. The software version of the CPLD controlling card connected to this port. Applicable only for an installed and associated ODU.
Serial Number	Read-only. The serial number of the ODU card connected to this port. Applicable only for an installed and associated ODU.
ODU Status	Read-only. A decimal number representing the value of a 32-bits mask indicating possible failures. For details refer to Table 7-5 below. Applicable only for an installed and associated ODU.
Tx Operational Status	Read-only. The current operational status of the Tx port. In Rx ports (ports 2 and 4 in a 4x2 ODU) always set to Disable.

Table 7-5: ODU Status Mask Bit Mapping for Macro Indoor/Outdoor ODU

Bit Set to 1	Failure
None	No Failure
1	AU Communication with ODU was lost
2	An error was detected while downloading a table to the ODU
3	The ODU temperature is high
4	Not used
5	Not used

Table 7-5: ODU Status Mask Bit Mapping for Macro Indoor/Outdoor ODU

Bit Set to 1	Failure
6	Power amplifier failure
7	The ODU has detected an internal hardware problem
8-32	Not used

7.6.2.2 Radio

The Radio Node is applicable only for Micro Outdoor BTS. It includes two Radio pages: Radio 1 and Radio 2.

The Radio page includes the properties of the respective Radio.

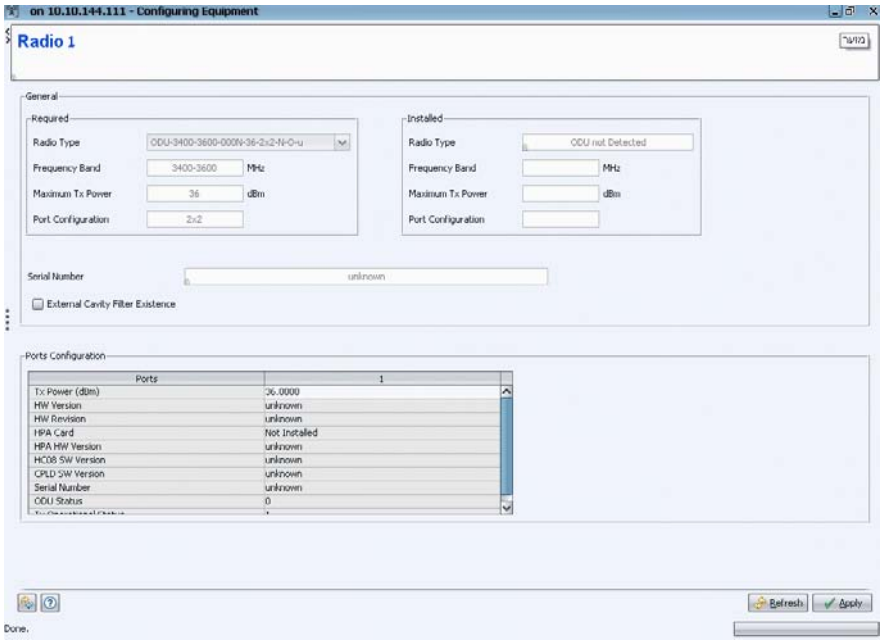


Figure 7-27: Radio Page

The Radio page includes the following sections:

- "General"
- "Ports"

7.6.2.2.1 General

The General section is divided into sub-sections.

The Required section enables viewing the read-only Type of the BTS. It also provide read-only properties of the Radio based on the BTS type:

Parameter	Description
Radio Type	The BTS type.
Frequency Band	The frequency band supported by the BTS Type, in MHz.
Maximum Tx Power	The maximum Tx power available for the BTS Type, in dBm.
Port Configuration	The Port Configuration of the BTS Type (2x2).

The Installed section displays read-only information about the Type and the properties of the Radio that are available only for a Radio that is associated to a sector:

Parameter	Description
Radio Type	The BTS type (or Radio not Associated to sector).
Frequency Band	The frequency band supported by the installed BTS Type, in MHz.
Maximum Tx Power	The maximum Tx power available for the installed BTS Type, in dBm.
Port Configuration	The Port Configuration of the installed BTS Type (2x2).

In addition, the following Radio general properties are displayed below the Required and Installed sections:

Parameter	Description
Serial Number	Read-only. The serial number of the BTS.
External Cavity Filter Existence	Check to indicate the existence of an external cavity filter. The default is no (unchecked).

7.6.2.2.2 Port

The Port section includes parameters for the Radio module:

Parameter	Description
Tx Power (dBm)	The required Tx power at the Radio Port, in dBm. The actually available range depends on BTS Type: The upper limit, which is the default, is set by the Maximum Tx Power supported by the BTS. The control range is 10dBm.

Parameter	Description
HW version	Read-only. The hardware version of the Radio card. Applicable only for an installed and associated Radio.
HW revision	Read-only. The hardware revision of the Radio card. Applicable only for an installed and associated ODU.
HPA Card	Read-only. Indicates whether the port is connected to an HPA card (installed/not installed).
HPA HW Version	Read-only. The hardware version of the HPA. Applicable only if an HPA card exists in an installed and associated Radio.
HC08 SW Version	Read-only. The software version of the HCO8 controlling card. Applicable only for an installed and associated Radio.
CPLD SW Version	Read-only. The software version of the CPLD controlling card. Applicable only for an installed and associated Radio.
Serial Number	Read-only. The serial number of the Radio card. Applicable only for an installed and associated Radio.
ODU Status	Read-only. A decimal number representing the value of a 32-bits mask indicating possible failures. For details refer to Table 7-6 below. Applicable only for an installed and associated Radio.
Tx Operational Status	Read-only. The current operational status of the Tx port.

Table 7-6: ODU Status Mask Bit Mapping for Micro Outdoor ODU

Bit Set to 1	Failure
None	No Failure
1	No signal or no TX / RX from AU
2	Failed to read calibration file
3	The ODU temperature is high
4	HW not compatible with the selected Radio type
5	Not used
6	Power out of range
7	Current out of range
8	Synthesizer Lock Failure
9	RX gain out of range, Rx signal is too high
10-32	Not used

7.6.2.3 GPS Page

In a Macro Indoor/Outdoor BTS and Micro Outdoor BTS the GPS page enables defining the GPS receiver configuration. In a Mini-Centralized ASN-GW it enables defining the SNTP parameters. It also enables defining other time synchronization settings.

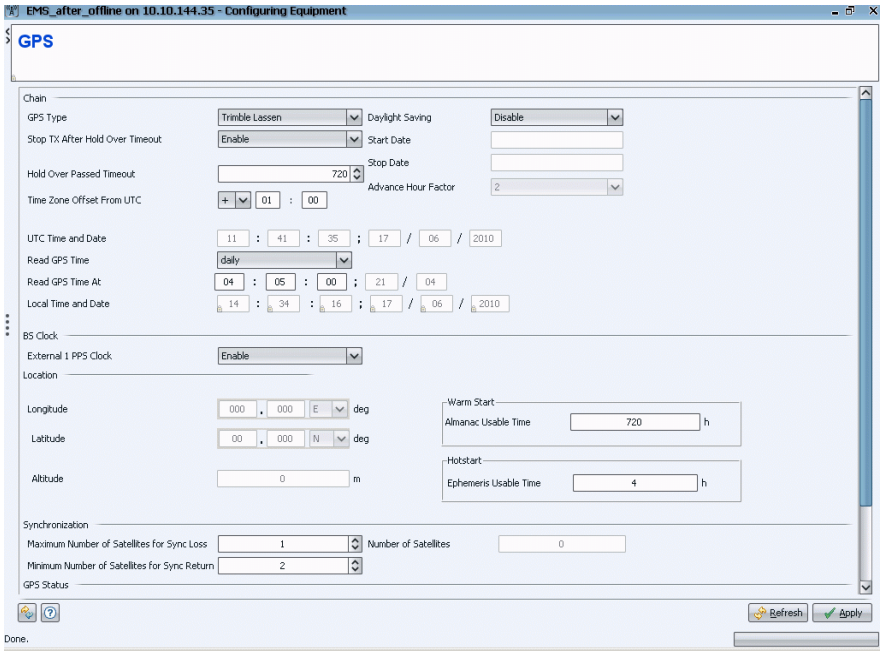


Figure 7-28: GPS Page, Macro Indoor BTS

The GPS page includes the following sections:

- "Chain"
- "BS Clock" (Applicable only for Macro Indoor/Outdoor BTS)
- "Location" (Not applicable for Mini-Centralized ASN-GW)
- "Warm Start" (Applicable only for Macro Indoor/Outdoor BTS)
- "Hot Start" (Applicable only for Macro Indoor/Outdoor BTS)
- "Synchronization" (Not applicable for Mini-Centralized ASN-GW)
- "GPS Status" Applicable only for a Macro Indoor/Outdoor BTS and Micro Indoor BTS using a Trimble Lassen GPS receiver)

- "Software Versions" (Not applicable for Mini-Centralized ASN-GW)
- "SNTP Primary/Secondary Server" (Applicable only for Mini-Centralized ASN-GW)

7.6.2.3.1 Chain

Parameter	Description
GPS Type	The type of time synchronization source to be used. The currently available options are: ■ None: No external time synchronization source ■ Trimble Acutime. Applicable only for Macro Indoor/Outdoor BTS. BMAX-Timing GPS-OGR model of outdoor GPS receiver. ■ Trimble Lassen: Applicable for Micro Outdoor BTS (GPS Antenna Kit) and (when available) Macro Indoor/Outdoor BTS (BMAX-4M-GPS model). ■ SNTP: Applicable only for Mini-Centralized ASN-GW. The default is None,
Stop Tx After Hold Over Timeout	Applicable only for a Macro Indoor/Outdoor BTS and Micro Outdoor BTS when a GPS receiver is used. Indicates whether the BTS should stop data transmission if the GPS lost synchronization with its satellites and the holdover passed timeout has occurred (Enable/Disable). When enabled, the BTS will stop transmitting after being in holdover state for more than Holdover Passed Timeout. The default is Enable.
Hold Over Passed Timeout	Applicable only for a Macro Indoor/Outdoor BTS and Micro Outdoor BTS when a GPS receiver is used. Defines the period, in minutes, for which the device provides holdover when the GPS loses synchronization with its satellites. The range is from 0 to 2880 minutes. The default is 480 minutes.
Time Zone Offset From UTC	The offset of the local time from the UTC. The range is -12:00 to +13:00 in 30 minutes resolution. The default is +00.00.
UTC Time and Date	The UTC (Coordinated Universal Time) date and time. Configurable only if the GPS Type is set to None. Otherwise it is the read-only data received from the GPS receiver/SNTP server. The format is hh: mm: ss, dd/mm/yyyy hh between 0 and 23, mm between 0 and 59, ss between 0 and 59, dd/mm with usual date and month rules, yyyy between 2006 to 9999.

Parameter	Description
Read GPS Time	Applicable for Macro Indoor/Outdoor BTS when a GPS receiver is used. The interval after which the NPU should obtain the GPS time for frame synchronization, and send it to the AUs. The available options are: ■ Hourly ■ Daily ■ Monthly ■ Yearly The default is Daily.
Read GPS Time At	Applicable for Macro Indoor/Outdoor BTS when a GPS receiver is used. The time when the NPU should obtain the GPS time for frame synchronization. The format is hh:mm:ss; dd/mm. hh between 0 and 23, mm between 0 and 59, ss between 0 and 59, dd/mm with usual date and month rules. Only relevant components are available for configuration, according to the selected Read GPS Time. The default is 04:05:00, 21/04
Local Time and Date	A read-only display of the local date and time (using 24-hour clock) as calculated using the UTC Time and Date and taking into account the Time Zone Offset From UTC and Daylight Saving Time parameters. The format is: hh:mm:ss; dd/mm/yyyy. For example: 13:04:23; 12/07/2006.
Daylight Saving	The Daylight Saving parameter is used to enable or disable the daylight saving feature using the following Start Date, Stop Date and Advance Hour Factor parameters. The default is Disable.
Start Date	When Daylight Saving is enabled, this parameter defines the date for starting the daylight saving feature. At the beginning of this date (midnight at the beginning of this date), the clock will be advanced by the amount of hours specified by the Advance Hour Factor (see below). Use the format dd.mm to define the date and month at which to start activating the Daylight Saving feature.
Stop Date	When Daylight Saving is enabled, this parameter defines the date for ending the daylight saving feature (at “Advance Hour Factor” hours after midnight at the end of this date). Use the format dd.mm to define the date and month at which to end activating the Daylight Saving feature.

Parameter	Description
Advance Hour Factor	When Daylight Saving is enabled, this parameter defines the amount of time by which the clock should be advanced during the daylight saving period. The available values are 0 (daylight saving disabled), 1 and 2 (hours). The default is 0.

7.6.2.3.2 BS Clock

Applicable only for Macro Indoor/Outdoor BTS.

Parameter	Description
External 1 PPS Clock	Indicates whether the external 1PPS clock is enabled or disabled. If the External 1PPs clock is enabled, synchronization of air frames for inter-site and intra-site sectors should be managed by the external 1PPS GPS clock. If the External 1PPS clock is disabled, it indicates that the internal 1PPS at the NPU is used to synchronize air frames for inter-site and intra-site sectors. When using a GPS, External 1PPS clock must be enabled for proper operation of the system. The default is Enable.

7.6.2.3.3 Location

Not applicable for Mini-Centralized ASN-GW.

The Location parameters are configurable only for Macro Indoor/Outdoor BTS or Micro Outdoor BTS with GPS Type set to None. Otherwise they are read-only, displaying the values calculated by the GPS receiver.

The Location section includes the following parameters:

Parameter	Description
Longitude	The longitude of the site. The format is lll.mmm,a: lll.is longitude in degrees (between 000 to 179); mmm is in minutes (between 000 and 999); a - is E (east) or W (west). The default is 000.000.E.
Latitude	The latitude of the site. The format is ll.mmm,a: ll.is latitude in degrees (between 00 to 89); mmm is in minutes (between 000 and 999); a - is N (north) or S (south). The default is 00.000.N.
Altitude	The altitude in meters of the site. The Altitude is in meters, from -300.0 to 9000.0. The default is 0.

7.6.2.3.4 Warm Start

Applicable only for Macro Indoor/Outdoor BTS.

Parameter	Description
Almanac Usable Time	The maximum period, in hours, for which the Almanac time is valid when the GPS is reset. The range is from 0 to 4320. The default is 720.

7.6.2.3.5 Hot Start

Applicable only for Macro Indoor/Outdoor BTS.

Parameter	Description
Ephemeris Usable Time	The maximum period, in hours, for which the Ephemeris time is valid when the GPS is reset. The range is from 0 to 168. The default is 4.

7.6.2.3.6 Synchronization

Not applicable for Mini-Centralized ASN-GW.

Parameter	Description
Maximum Number of Satellites for Sync Loss	Applicable only for a Macro Indoor/Outdoor BTS. When a GPS receiver is used, this is the minimum number of received satellites required for maintaining synchronization. The range is from 0 to 11. Must be lower than Minimum Number of Satellites for Sync Return. The default is 1.
Minimum Number of Satellites for Sync Return	Applicable only for a Macro Indoor/Outdoor BTS. When a GPS receiver is used, this is the minimum number of received satellites required for the GPS to re-synchronize so that the unit can terminate holdover state. The range is from 1 to 12. Must be higher than Maximum Number of Satellites for Sync Loss. The default is 2.
Number of Satellites	Read-only. The number of satellites currently acquired by the GPS.

Note: In a Micro Outdoor BTS using a GPS receiver, the Maximum Number of Satellites for Sync Loss and Minimum Number of Satellites for Sync Return parameters are not configurable and are hard coded to 1 and respectively.

7.6.2.3.7 GPS Status

Applicable only for a Macro Indoor/Outdoor BTS and Micro Indoor BTS using a Trimble Lassen GPS receiver.

Parameter	Description
1PPS	The status of External 1PPS clock (OK or Failed)
4 Sat & more	Not applicable if a GPS receiver is not connected. Indicating whether 4 (the minimum required for initial synchronization) or more satellites are received by the GPS receiver (OK or Failed)
2 Sat & more	Not applicable if a GPS receiver is not connected. Indicating whether 2 (the minimum number required for maintaining synchronization) or more satellites are received by the GPS receiver (OK or Failed).
GPS Com Failure	Not applicable if a GPS receiver is not connected. Indicating the status of communication with the GPS receiver (OK or Failed)
Hold Over Entered	Indicating whether the device has entered into Hold Over state (None or Started)
Hold Over T/O Passed	Indicating whether Hold Over Timeout has passed (None or Passed)
BS Stopped to Transmit	Indicating whether the BSs are transmitting or not (OK/Stopped)

7.6.2.3.8 Software Versions

Not applicable for Mini-Centralized ASN-GW.

Parameter	Description
Navigation Processor SW Version	Read-only. The software version of the navigation processor of the GPS receiver (if used).
Signal Processor SW Version	Read-only. The software version of the signal processor of the GPS receiver (if used).

7.6.2.3.9 SNTP Primary/Secondary Server

Applicable only for Mini-Centralized ASN-GW.

Parameter	Description
IP Address	The IP address of the Primary/Secondary SNTP Server.
Operational Status	Read-only. The operational status of the Primary/Secondary SNTP Server (Enable/Disable) according to the keep-alive response.

7.6.2.4 Power Feeder Page

Applicable only for Macro Indoor BTS.

The high-power PIU can support a maximum current of 58 A (@-40.5 VDC). In certain installations with a relatively high number of ODUs this current may not be sufficient to power the shelf and all the ODUs. In such installations the ODU Power Feeder is used as an additional power source providing power (-48 VDC) to

ODUs. It transfers transparently all signals between the AU and the ODU, while injecting DC power received from an external source. Each ODU Power Feeder unit can serve up to four ODUs.

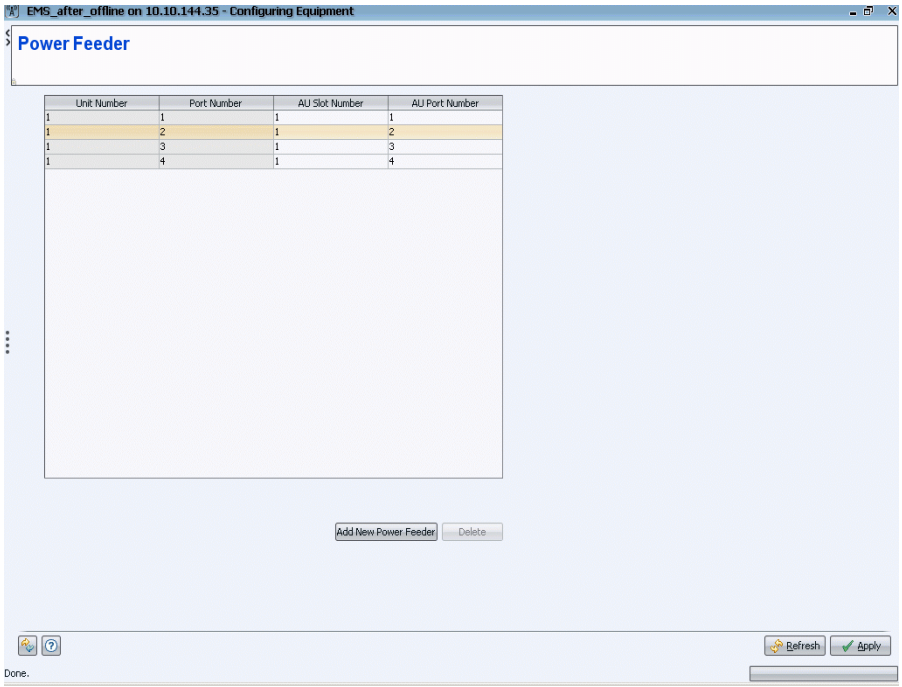


Figure 7-29: Power Feeder Page

The Power Feeder table includes the following parameters:

Parameter	Description
Unit Number	Read-only. The Power Feeder Unit Number (1-4)
Port Number	Read-only. The Power Feeder Port Number (1-4)
AU Slot Number	The Slot Number of the AU to which the Power Feeder Port is connected: 1-4, 7-9, or None. The default is None.
AU Port Number	The AU Port Number to which the Power Feeder Port is connected:1-4, or None. The default is None.

In addition, the page includes the following buttons:

Button	Description
Add Power Feeder	Adds a new Power Feeder to the table. Up to 4 Power Feeders may be configured. Each Power Feeder includes 4 entries for Port Number 1 to 4. Note that each combination of AU Slot Number and AU Port Number cannot appear in more than one entry (excluding combinations with None value).
Delete	Deletes the selected Power Feeder from the table. You must select all 4 entries of a Power Feeder to delete it.

7.6.2.5 Antenna Page

The Antenna page is applicable for Macro Indoor/Outdoor BTS and Micro Outdoor BTS.

The Antenna page enables defining the properties of the site's antennas.

The Antenna page comprises two sections: The Antennas List and the Antennas Parameter Editor section.

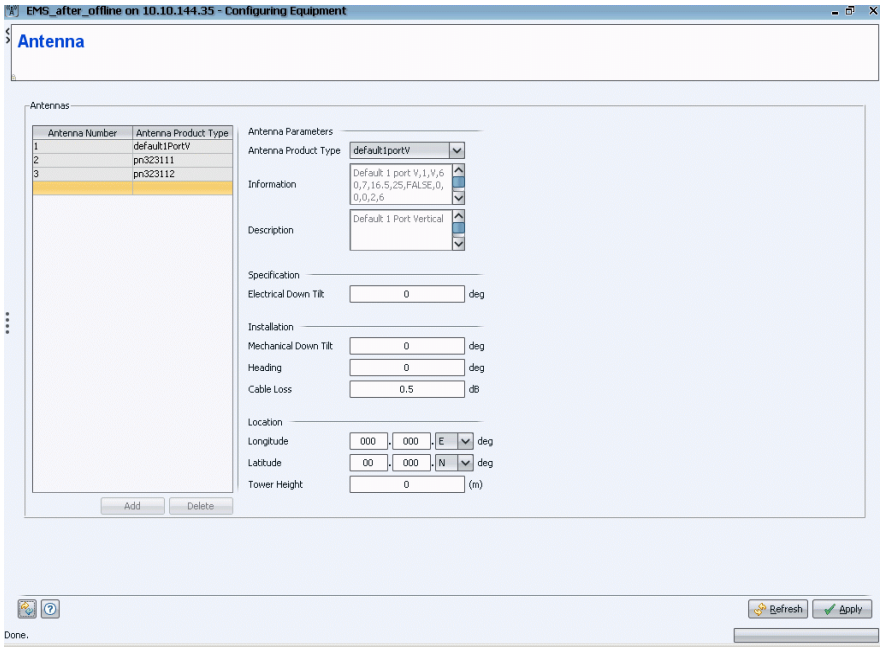


Figure 7-30: Antenna Page

The Antennas List includes the following read-only parameters for each defined antenna:

Parameter	Description
Antenna Number	The index number of the antenna.
Antenna Product Type	The type of antenna (Product ID).

Select an entry to open the Antenna Parameters Editor, allowing you to view/modify the selected antenna parameters.

The following buttons are available below the Antennas List:

Button	Description
Add	Adds a new entry to the Antennas List. The Antenna Parameters Editor will open with default values, enabling to define the parameters for the new antenna. After completing the definition process and pressing Apply, the new antenna will be added to the list. Its number will be the first free number. The list can include up to 28 antennas for a Macro Indoor BTS, up to 24 antennas for a Macro Outdoor BTS and up to 2 antennas for Micro Outdoor BTS.
Delete	Deletes the selected entry (or several selected entries) from the Antennas List.

IMPORTANT

An associated antenna (specified in a Site Sector Association) cannot be deleted. For more details refer to "Site Sector <#> Page" on page 279.

The Antennas Parameters Editor section includes the following parameters:

Parameter	Description
Antenna Product Type	The antenna type. The available options includes a list of default and standard antennas. The default is default1portV. The Antenna Product Type of an associated Antenna cannot be modified.
Information	Read-only string indicating the characteristics of the Antenna according to the Antenna Product Type. The string structure is <type>,N,P,A,E,G,F,<EDT Supported>,<EDT Min>,<EDT Max>,<EDT Step>, <Frequency Min>, <Frequency Max> where: type: part number or one of the default antennas N: Number of Ports P: Polarization per port. Available options are V (Vertical), H (Horizontal), 45-45 (2-ports DS), 45-45 45-45 (4-ports DS) A: Azymuth Beam Width in degrees E: Elevation Beam Width in degrees G: Gain in dBi F: Front-to-Back Ratio in dB. <EDT Supported>: FALSE or TRUE <EDT Min>: The lowest value in the EDT control range <EDT Max>: The highest value in the EDT control range <EDT Step>: The EDT control resolution <Frequency Min>: The lowest supported frequency, in GHz <Frequency Max>: The highest supported frequency, in GHz
Description	A read-only description providing general details according to the Antenna Product Type. The details include the antenna manufacturer, number of ports, polarization, azymuth beamwidth (if other than omni) and gain. EDT indicates support of Electrical Down Tilt.

Parameter	Description
Specification	
Electrical Down Tilt (deg)	The downwards electrical tilt of the antenna, in degrees. The range is from -90.0 to 90.0 using 0.1 degree resolution. Used only for information (inventory) purposes. The default is 0.
Installation	
Mechanical Down Tilt (deg)	The downwards mechanical tilt of the antenna (in degrees) as opposed to the electrical tilt already integrated in the antenna (and thus taken as reference; instead of the horizontal plane). The range is from -90.0 to 90.0 using 0.1 degree resolution. Used only for information (inventory) purposes. The default is 0.
Heading (deg)	The the azimuth angle (in degrees) between the center of the horizontal antenna beamwidth and the true north; counting clockwise.The range is from 0 to 359. Used only for information (inventory) purposes. The default is 0.
Cable Loss (dB)	The attenuation (in dB) of the cable between the ODU port and antenna port. The range is from 0 to 20 in 0.1 dB steps. Used only for information (inventory) purposes. The default is 0.5.
Location	
Longitude (deg)	The longitude of the antenna. The format is lll.mmm,a: lll.is longitude in degrees (between 000 to 179); mmm is in minutes (between 000 and 999); a - is E (east) or W (west) Used only for information (inventory) purposes. The default is 000.000E.
Latitude (deg)	The latitude of the antenna. The format is ll.mmm,a: ll.is longitude in degrees (between 00 to 89); mmm is in minutes (between 000 and 999); a - is S (south) or N (north). Used only for information (inventory) purposes. The default is 00.000N.
Tower Height (m)	The height of the antenna above the ground in meters. The range is from 0 to 500. Used only for information (inventory) purposes. The default is 0.

7.7 ASN-GW

The ASN-GW node applicable for Macro Indoor/Outdoor BTS operating in Distributed ASN-GW ASN Topology and for Mini-Centralized ASN-GW.

The ASN-GW enables defining various parameters pertaining to the Access Service Network (ASN) Gateway functionality of the managed device.

The ASN-GW node includes the following pages:

- "AAA Page"
- "Service Group Page"
- "QoS Marking Page"
- "SFA Page"
- "Hot Lining Page"

7.7.1 AAA Page

The AAA page enables the configuration of general RADIUS parameters and the AAA client. The RADIUS client encapsulates the messages destined for the AAA server in RADIUS messages or decapsulates messages sent by the AAA server for the MS.

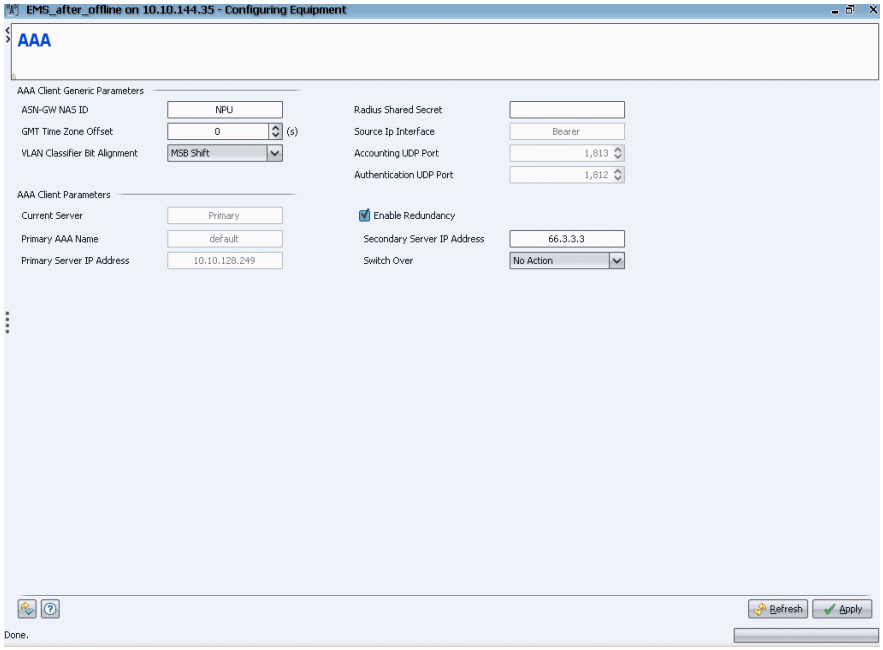


Figure 7-31: AAA Page

The AAA page comprises two sections: the AAA Client Generic Parameters and the AAA Client parameters.

The AAA Client Generic Parameters are:

Parameter	Description
ASN-GW NAS ID	The unique identifier of the ASN-GW NAS. Sent in Access Request message only if configured. Should be in FQDN format. Up to 64 characters. The default is null.
GMT Time Zone Offset	The time zone offset, in seconds, from GMT at the NAS. The range is from 0 to 86400 seconds. The default is 0.

Parameter	Description
VLAN Classifier Bit Alignment	Defines how to transfer VLAN ID between R3 and R6: ■ MSB Shift: a. When transferring classifier VID value from R3 side to R6 side, the binary value of the 12 least significant bits in R3 TLV will be copied and pasted as most significant bits in R6 TLV. b. When transferring classifier VID value from R6 to R3, the binary value of the 12 most significant bits in R6 TLV will be copied and pasted as the 12 least significant bits in R3 TLV. ■ LSB: The whole 16 bit value of the relevant TLV will be transferred without any change when transferring classifier VID value from R3 side to R6 side and from R6 to R3. The default is MSB Shift.
RADIUS Shared Secret	The shared secret between the AAA client and the AAA server(s). A string of 1 to 49 characters. The default is default. This is a write-only parameter (not displayed to the user).
Source IP Address	The interface providing RADIUS client functionality. The available options are Bearer and External Management. The default is Bearer.
Accounting UDP Port	Read-only. The port used for accounting messages (1813).
Authentication UDP Port	Read-only. The port used for authentication messages (1813).

The AAA Client parameters are:

Parameter	Description
Current Server	A read only display of the current active server being used (primary or Secondary).
Primary AAA Name	The name of the AAA Server. In the current release supporting a single client this is a read-only parameter (default).
Primary Server IP Address	The IPv4 address of the primary AAA server. Cannot be the same as the Secondary Server IP Address or any of the NPU IP interfaces. The default is 172.16.0.10.
Enable Redundancy	Indicates whether AAA server redundancy is supported. If enabled, the ASN-GW will try switching to the secondary server if the primary server does not respond, and vide versa. The default is Disable. Note: Redundancy cannot be disabled if the Current Server is the Secondary Server. If Redundancy is enabled and the Current Server is the Secondary Server, use the Switch Over option to switch to the Primary Server before disabling redundancy. If Redundancy is enabled - the IP Address of the Active server (Primary or Secondary) cannot be modified.

Parameter	Description
Secondary Server IP Address	The IPv4 address of the secondary AAA server. Cannot be the same as the Primary Server IP Address or any of the NPU IP interfaces. 0.0.0.0 (the default) means no secondary server. Must be set to a valid IP address if Redundancy is enabled.
Switch Over	Enable and click Apply to switch from the Primary Server to Secondary Server or Vice Versa. The default is Disable.

7.7.2 Service Group Page

The Service Group page enables managing the service interfaces and service groups.

The Service Group page includes the following tabs:

- "Service Interfaces Tab"
- "Service Groups Tab"

7.7.2.1 Service Interfaces Tab

The Services Interfaces tab enables viewing/modifying the parameters of existing service interfaces. It also enables adding new service interfaces (up to a maximum of 10) and deleting service interfaces.

A Service Interface defines the parameters of the interface used by the NPU on the network side for services using the applicable Service Interface, specified in the applicable Service Group.

The following types of Service Interface are available:

- IP-in-IP: The Service Interface defines the parameters on the NPU side of a point-to-point tunnel to be used for the applicable traffic.
- VLAN: The Service Interface defines the VLAN ID to be added/removed by the NPU to/from the applicable traffic.

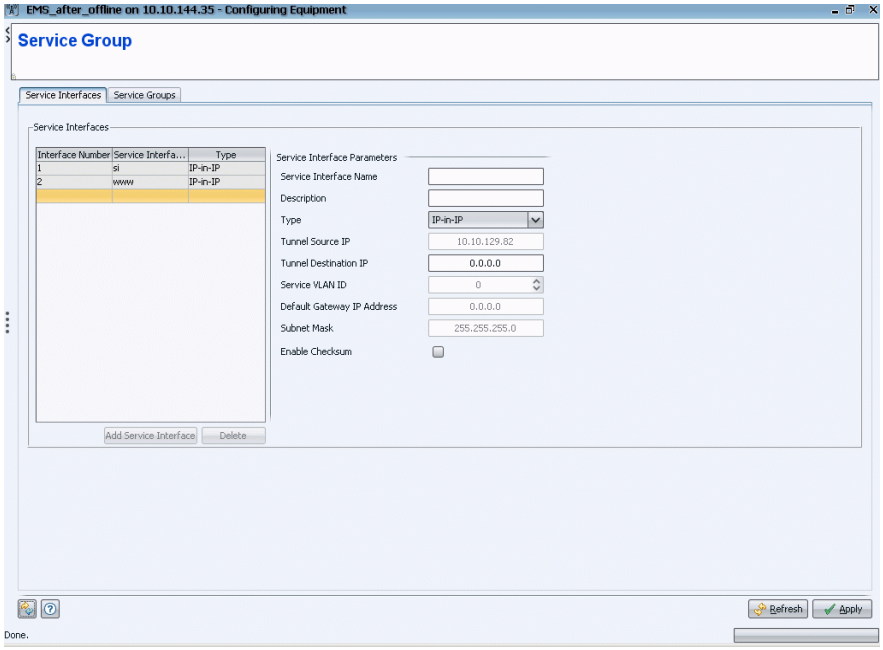


Figure 7-32: Service Group Page - Service Interfaces Tab

The Service Interfaces table includes the following read-only parameters for each of the configured service interfaces:

Parameter	Description
Interface Number.	The index number of the interface (1-10).
Service Interface Name	The name of the service interface.
Type	The type of service interface: IP-in-IP, VLAN, QnQ

Select an entry in the table to open the Service Interface Editor for the selected service interface.

The following buttons are available below the Service Interfaces table:

Button	Description
Add Service Interface	Adds a new entry to the table and opens the Service Interface Editor, allowing configuration of parameters for the new service interface. Up to 10 service interfaces can be defined.
Delete	Deletes the selected entry (or several selected entries) from the table. A service Interface associated to a Service Group cannot be deleted. A QinQ service interface associated to a service flow cannot be deleted.

NOTE

The Bearer Interface IP Address (see "ASN-GW Bearer Interface Page" on page 176) must be configured prior to creating any IP-in-IP or VLAN service interfaces.

The Service Interface Editor includes the following parameters:

Parameter	Description
Service Interface Name	The name (alias) of the service interface. A string of 1 to 30 characters. Must be unique in the device. Configurable only when adding a new service interface.
Description	An optional brief description of the service interface. A string of up to 70 characters. The default is null.
Type	The type of service interface: IP-in-IP, VLAN, or QinQ. Configurable only when adding a new service interface. The default is IP-in-IP.
Tunnel Source IP	Applicable only for IP-in-IP service interface. Read-only. The source IPv4 address that indicates the point of origination of the tunnel for the service interface. Set to the value of the Bearer Interface IP Address.
Tunnel Destination IP	Applicable only for IP-in-IP service interface. Configurable only when adding a new service interface.The destination IPv4 address that indicates the point of termination of the tunnel for the service interface. Must be unique among all the Host Interfaces IP's (Bearer, Local-Management, Internal-Management, External-Management), existing instances of Service Interface Tunnel Destination IP and Default Gateway IP and subnets of Local Management, Internal Management and External Management. The default is 0.0.0.0 (must be changed to a valid value).
Service VLAN ID	Applicable only for VLAN and QinQ service interfaces. Configurable only when adding a new service interface. The Service Interface VLAN ID parameter for VLAN service interface, SVID for QinQ service interface. The range is 1-9, 11- to 4094. The default is 0. A Service Interface VLAN ID shall not conflict with other instances of Service Interface VLAN ID and VLAN IDs of Bearer, Local-Management and External-Management interfaces. Shall also not conflict with CVID of any transparent MS.
Default Gateway IP Address.	Applicable only for VLAN service interfaces. Configurable only when adding a new service interface. The IP Address of the Default Gateway. Must be unique among all the Host Interfaces IP's (Bearer, Local-Management, Internal-Management, External-Management), existing instances of Service Interface's Tunnel Destination IP Address and Default Gateway IP Address, and subnets of Default Gateway IP addresses. Should be in the same subnet.with the IP Address of the DHCP server/proxy/relay to be assigned to a service group using this service interface. The default is 0.0.0.0 (must be changed to a valid value).

Parameter	Description
Subnet Mask	Applicable only for VLAN service interfaces. The subnet mask of the default gateway. Should not overlap with an existing Interface subnet (host interfaces, other service interfaces). The Subnet Mask of a service interface associated to a service group cannot be modified. The default is 255.255.255.0.
Enable Checksum	Applicable only for IP-in-IP service interfaces. Indicates whether or not the tunnel checksum feature is enabled (yes or no). The default is no (unchecked).

7.7.2.2 Service Groups Tab

The Services Groups tab enables viewing/modifying the parameters of existing service group. It also enables adding new service groups (up to a maximum of 10) and removing service groups.

A service group is a group of MSs that are served by the same service provider or service flows that belong to the same service class.

The following service group types are supported:

- **IP**: This type of service group is used only for IP CS flows. Once service group is configured as type IP, additional IP allocation configuration is also required (such as DHCP mode, IP pool, IP Subnet, etc). This type of service group must be associated with either IP-IP (encapsulated IP packets) or VLAN type of R3 service interface. An IP service group can be configured to support time based or volume and time based accounting. In addition, an IP service group can be configured to support direct communication between MSs belonging to the service group.

- **VPWS-Transparent**: This type of service group is used only for VLAN CS flows. Once service group is configured as VPWS-Transparent type, IP allocation configuration is not required. This type of service group is not associated with any R3 service interface as vlan-tagged MS traffic is transferred transparently on the on the R3 interface. A VPWS-Transparent service group can be configured to support time based accounting.

- **VPWS-QinQ**: This type of service group is used only for VLAN CS flows. Once service group is configured as type VPWS-QinQ type, IP allocation configuration is not required. This type of service group is not associated with any R3 service interface as double-tagged MS traffic is transferred transparently on the on the R3 interface. The QinQ VLAN used by the MS should be received from the AAA server in Access-Accept messages. A VPWS-QinQ service group can be configured to support time based accounting.

- **VPWS-Mapped**: This type of service interface is intended for special needs were VLAN CS service flows from multiple MSs use the same VLAN ID. Once service group is configured as VPWS- Mapped type, IP allocation configuration is not required. This type of service group makes the mapping between a unique MS flow VLAN ID used on R3 interface and a CVID. The CVID can be missing. For this service group type a VLAN pool need to configured. The ASN-GW will uniquely allocate a VLAN from the configured pool to each MS flow to be used on R3 interface. A VPWS-Mapped service group can be configured to support time based accounting.

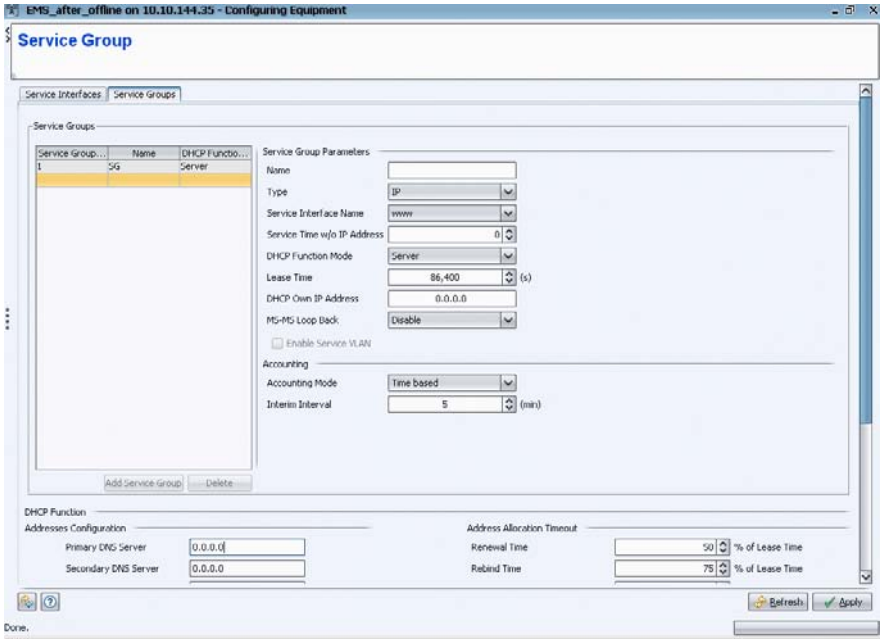


Figure 7-33: Service Group Page - Service Groups Tab

The Service Groups tab includes the Service Groups table and the Editors for Service Group Parameters and DHCP Function.

Select an entry in the table to open the Editors for the Service Group Parameters and the DHCP Function tor for the selected service group.

The Service Groups table includes the following read-only parameters for each of the existing service groups:

Parameter	Description
Service Group Number	The index number of the Service Group.
Name	The name (alias) of the Service Group.

Parameter	Description
DHCP Function Mode	Applicable only for IP Service Groups. The DHCP function mode (Server, Relay, Proxy).

The following buttons are available below the Service Groups table:

Button	Description
Add	Adds a new entry to the Service Groups table and opens the Editors for the Service Group Parameters and DHCP Function, allowing to configure the required parameters.
Delete	Deletes the selected entry (or several selected entries) from the Service Groups table. A Service Group cannot be deleted if it is assigned to a Service Flow. Refer to "Service Profile Page" on page 235. A Service Group with an associated VLAN Service Interface cannot be deleted if the Enable Service VLAN is set to enable.

The Service Group Parameters Editor section includes the following parameters

Parameter	Description
Name	The name (alias) of the service group. A string of 1 to 30 characters. Must be unique in the device. Configurable only when creating a new Service Group.
Type	The Service Group's type: IP, VPWS-QinQ, VPWS-Transparent, VPWS-Mapped. Configurable only when creating a new Service Group. The default is IP.
Service Interface Name	Applicable only for IP Service Groups. The pre-defined service interface alias used as the data path for traffic towards the core network. Configurable only when creating a new Service Group. Note that a Service Interface can be associated only to a single Service Group.

Parameter	Description
DHCP Function Mode	Applicable only for IP Service Groups. The DHCP function mode. ■ Server: The ASN-GW function as a DHCP server that allocates an IP address to the MS from the local pool (in the non-HA mode). ■ Relay: The IP address is obtained using an external DHCP server (in the non-HA mode). ■ Proxy: Non-HA mode: In Non-HA mode the DHCP proxy assigns the MS, the IP address that was received from AAA in the MS profile. In HA mode the DHCP proxy assigns to the MS the IP address received in the MS profile or obtains the IP address from HA using the mobile IP. Configurable only when creating a new Service Group. The default is Server. Note that upon selection of the Relay option the other parameters available in the Editors change to reflect the unique functionality of this mode.
Service Time W/O IP Address	Time of waiting for DHCP request when initial Data Path is established. If expires, MS should be deregistered. The range is 0 to 86,400 seconds. A value of 0 means this timer is deactivated (and MS is not deregistered). The default is 0.
Lease Time	Applicable only for IP Service Groups. Not applicable in DHCP Relay mode. The lease time in seconds of IP address allocated for MS from this Service Group. The range is 24-4294967295. The default is 86,400. In the Proxy mode, this value is used if appropriate parameter is not received in RADIUS Access-Accept.
DHCP Own IP Address	Applicable only for IP Service Groups. The IP address of the DHCP server/relay/proxy. Must be different from other instances of DHCP Own IP Address in the device. For a service group using a VLAN service interface, should be in same subnet with the Default Gateway configured for the service interface associated with the service group. Subnet mask is taken as the default subnet mask i.e 255.255.255.0. In DHCP Server mode, the DHCP server IP address must be in the same subnet but outside the range allocated for users address pool as provisioned in the DHCP Server. Configurable only when creating a new Service Group. The default is 0.0.0.0 (must be changed to a valid value).

Parameter	Description
Enable Service VLAN	Applicable only for IP Service Groups with an attached VLAN service interface. Indicates the status of a VLAN service interface attached to the service group. Not configurable when the attached Service Interface is IP-in-IP. If a Service Group with Service VLAN enabled is attached to a Service Profile, Service VLAN cannot be disabled. The default is Disable.
MS-MS Loopback	Applicable only for IP Service Groups. Indicates whether MS-MS loopback is enabled or disabled for the service interface. The default is Enable.
VID Mapping Range	
Start	Applicable only for VPWS-Mapped Service Groups. The start value of the range of VLAN IDs for mapping. The default is 0. None of the value within the range shall overlap with any existing infrastructure (host interfaces) VLAN IDs. None of the value within the range shall overlap with VID mapping ranges of other existing Service Groups.
End	Applicable only for VPWS-Mapped Service Groups. The end value of the range of VLAN IDs for mapping. Cannot be lower than Start value. The default is 0. None of the value within the range shall overlap with any existing infrastructure (host interfaces) VLAN IDs. None of the value within the range shall overlap with VID mapping ranges of other existing Service Groups.
Accounting	
Accounting Mode	Accounting mode for the service interface: None: No accounting support. Time based: The ASN-GW send RADIUS Accounting Start/Stop Requests. The ASN-GW shall also send Interim Accounting requests to AAA server using RADIUS Accounting Interim messages on a preconfigured or negotiated interval. AAA server can send negotiated time interval in Access-Accept message. If the defined value (see Interim Interval below) is zero and there is no Acct-Interim-Interval in Access Accept, interim updates should be deactivated. Volume and time based: Applicable only for IP Service Groups. Functionality is the same as for Time option above. In addition, this mode supports postpaid accounting by supporting IP Session Volume Based Accounting. The ASN-GW will report the cumulative volume counters for each MS IP Session. The counters will be collected per MS Service Flow and will be cumulated in order to get the MS IP Session counters. The default is Time based.

Parameter	Description
Interim Interval	Not applicable if Accounting Mode (see above) is set to None. The default interval in seconds for Accounting Interim reports to be used if Acct-Interim-Interval is not received from the AAA server. Value “0” means interim reports are deactivated unless Acct-Interim-Interval is sent by the AAA server in Access Accept messages. The valid range is 0 (none) or 5-1600 (minutes). The default is 5.

The DHCP Function Editor for Server and Proxy modes includes the following parameters:

Parameter	Description
Address Configuration	
Primary DNS Server	IP Address of the first DNS Server to be provisioned to MS from this Group. The default is 0.0.0.0. In the Proxy mode, this value is used if appropriate parameter is not received in RADIUS Access-Accept.
Secondary DNS Server	IP Address of the second DNS Server to be provisioned to MS from this Group. The default is 0.0.0.0. In the Proxy mode, this value is used if appropriate parameter is not received in RADIUS Access-Accept.
IP Address Pool	Applicable only in Server mode. The range of IP addresses in the address pool (From - To). The defaults are From 0.0.0.0, To 255.255.255.255. DHCP IP addresses in the pool shall not overlap with the DHCP address pool defined in an existing service group and with IP addresses of host interfaces (Bearer, External Management, Internal Management and Local Management).
Add Excluded IP Address	Applicable only in Server mode. Enables you to add an IP address to the Excluded IP address List (see below). To add an IP address, enter it in the text box and click on the **Add** button. The default added address is 0.0.0.0.
Excluded IP Address List	Applicable only in Server mode. The list of IP addresses that are to be excluded from the address pool. The list can contain up to 16384 IP addresses. To remove one or several IP addresses from the list, select the addresses to be removed and click on the **Delete** button.
Subnet Mask	Applicable only in Server/Proxy mode. In Server mode, this is the subnet mask to be provided by local DHCP Server with IP address. In the Proxy mode, this value is used only if appropriate parameter is not received in RADIUS Access-Accept.

Parameter	Description
Default Gateway IP Address	Applicable only in Server/Proxy mode. In Server mode this is the IP address of the Default Gateway to be provided by the local DHCP Server with the device IP address. In the Proxy mode, this value is used only if appropriate parameter is not received in RADIUS Access-Accept.
Address Allocation Timeout	
Renewal Time	The interval, as a percentage of the Lease Time, after which the MS can request renewal of a lease that has expired. The range is from 1 to 100. The default is 50%. The renewal Time must be lower than rebind Time. This value is used if appropriate parameter is not received in RADIUS Access-Accept
Rebind Time	The rebind interval, as a percentage of the Lease Time. This is passed to the MS (DHCP client). The range is from 1 to 99. The default is 75%. This value is used if appropriate parameter is not received in RADIUS Access-Accept.
Offer Reuse Time	The interval, in seconds, within which the MS should send a DHCP request to accept the address sent by the NPU. If the MS does not accept the address within this period, the MS is deregistered. The range is from 1 to 120. The default is 5 seconds.
Management Server	
Server Host Name	The server host name. This parameter is sent in dhcp-offer / dhcp-ack messages and may be used by certain CPEs. A string of up to 64 characters. The default is null.
Client Boot File Name	The client boot file name. This parameter is sent in dhcp-offer / dhcp-ack messages and may be used by certain CPEs. A string of up to 128 characters. The default is null.
Vendor Class Identifier	The option 60 string. Up to 30 characters. An empty string (null) means that DHCP Option 60 is disabled. The default is null.
Vendor Specific Information Name	Option 43 Name string. Up to 64 characters. The default is InternetGatewayDevice.ManagementServer.URL.
Vendor Specific Information Value	Option 43 Value string. Up to 64 characters. The default is null.

The DHCP Function Editor for Relay mode includes the following parameters:

Parameter	Description
External DHCP Server IP Address	The IP address of the external DHCP server. The default is 0.0.0.0. Must be configured to a valid IP address.
Enable Relay Agent Information	Mark to enable Relay Agent Information (Option 82). All following parameters are applicable only if Relay Agent Information is enabled. The default is Disable (unmarked).
Relay Agent Information Parameters	
Enable Unicast Relay Agent Information	Indicates whether the Unicast parameter is enabled or disabled. The default is Disable.
Enable RADIUS Attributes	Indicates whether RADIUS Attributes (sub-option 7) 82 is enabled or disabled. The default is Disable.
RADIUS Attribute Messages *(applicable only if Enable RADIUS Attributes is enabled)*	
Service Type	Indicates whether Service Type (attribute 6) is enabled or disabled). The default is Disable.
Vendor Specific	Indicates whether Vendor Specific (attribute 26) is enabled or disabled). The default is Disable.
Session Timeout	Indicates whether Session Timeout (attribute 27) is enabled or disabled). The default is Disable.
Agent Circuit ID	Sub-option 1 of option 82. The available options are: Not Set (disable), Default, MS ID, BS ID, NAS ID, NAS IP, ASCII Agent Circuit ID, Binary Free String, Full-NAI, Domain, ASCII MS ID, ASCII BS ID, ASCII BS MAC. The default is Not Set. For ASCII Agent Circuit ID, enter the ID string in the **Binary/ASCII Agent Circuit ID** text box (up to 32 characters. For Binary Free String, enter a string of up to 32 hexadecimal digits (no spaces) in the **Binary/ASCII Agent Circuit ID** text box.
Agent Remote ID	Sub-option 2 of option 82. The available options are: Not Set (disable), Default, MS ID, BS ID, NAS ID, NAS IP, ASCII Agent Remote ID, Binary Free String Full-NAI, Domain, ASCII MS ID, ASCII BS ID, ASCII BS MAC. The default is Not Set. For ASCII Agent Remote ID, enter the ID string in the **Binary/ASCII Agent Remote ID** text box (up to 32 characters. For Binary Free String, enter a string of up to 32 hexadecimal digits (no spaces) in the **Binary/ASCII Agent Remote ID** text box.

Parameter	Description
Agent Subscriber ID	Sub-option 6 of option 82. The available options are: Not Set (disable), Default, MS ID, BS ID, NAS ID, NAS IP, ASCII Agent Subscriber ID, Binary Free String, Full-NAI, Domain. The default is Not Set. For ASCII Agent Subscriber ID, enter the ID string in the **Binary/ASCII Agent Subscriber ID** text box (up to 32 characters. For Binary Free String, enter a string of up to 32 hexadecimal digits (no spaces) in the **Binary/ASCII Agent Subscriber ID** text box.

7.7.3 QoS Marking Page

The QoS Marking page enables managing QoS marking rules for the bearer plane, based on parameters such as traffic priority, and the type of service, media, and interface.

For each marking rule, you can define the output parameters (outer-DSCP and VLAN-priority values) to be applied on service flows using best-match logic. For example, if we have the following two marking rules for BE traffic (Data Flow Delivery Type set to BE):

A. Interface Type set to Internal (R6) interface, All other parameters set to ANY.

B. All other parameters (including interface type) are set to ANY.

Than Rule A will apply to all BE traffic transmitted on the internal (R6) interface. Rule B will apply to all other BE traffic, meaning traffic transmitted on the external (R3) interface.

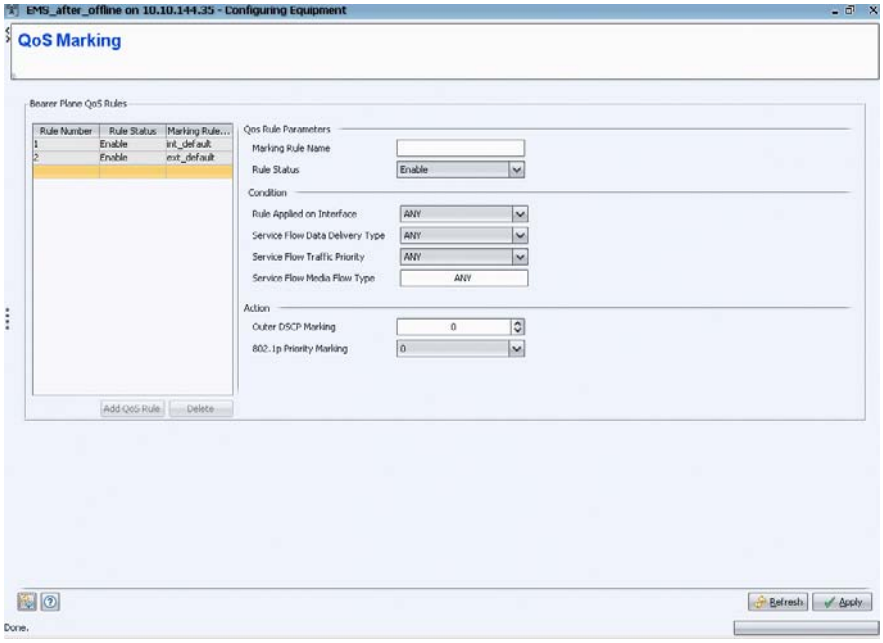


Figure 7-34: QoS Marking Page

The QoS Marking page comprises two sections: the Bearer Plane QoS Rules table and the QoS Rule Parameters Editor.

The Bearer Plane QoS Rules table includes the following read-only parameters for each existing rule:

Parameter	Description
Rule Number	The index number of the rule. An auto-sequential number from 1 to a maximum of 20.
Rule Status	The status of the rule (Enable or Disable).
Marking Rule Name	The name of the QoS marking rule.

Select an entry to open the QoS Rule Parameters Editor for the selected rule.

The following buttons are available below the table:

Button	Description
Add QoS Rule	Adds a new entry to the Bearer Plane QoS Rules table and opens the QoS Rule Parameters Editor, allowing to configure the new rule's parameter.

Button	Description
Delete	Deletes the selected entry (or several selected entries) from the table. Note that the default rules (Rule Number 1 and 2, int_default and ext_default respectively) cannot be deleted.

The QoS Rule Parameters Editor displays the following parameters for the new/selected rule:

Parameter	Description
Marking Rule Name	The name of the QoS marking rule. A string of 1 to 30 characters. Must be unique in the device. The name of an existing rule cannot be modified.
Rule Status	The status of the rule (Enable or Disable). The default is Enable.
Condition	
Rule Applied on Interface	The type of interface for which the bearer plane QoS rule is defined: Internal (R4/R6 tunnel), External (R1), or ANY. The default is ANY. The Interface type of an existing rule cannot be modified.
Service Flow Data Delivery Type	The type of service provided as an input parameter for the bearer plane QoS rule: UGS, RTVR; NRTVR; BE; ERTVR, or ANY. The default is ANY. The Service Flow Data Delivery Type of an existing rule cannot be modified.
Service Flow Traffic Priority	The traffic priority provided as an input parameter for the bearer plane QoS rule: 0-7 or ANY. The default is ANY. The Service Flow Traffic Priority of an existing rule cannot be modified.
Service Flow Media Flow Type	The media type provided as an input parameter for the bearer plane QoS rule. A value of ANY indicates that this parameter will be ignored. A string of 1 to 30 characters or ANY. The default is ANY. The Service Flow Media Flow Type of an existing rule cannot be modified.
Action	
Outer DSCP Marking	The Differentiated Service Code Point (DSCP) value to be used for marking the packets, if the packet complies with the marking rule's conditions. The range is from 0 to 63. The default is 0.
802.1p Priority Marking	The 802.1p priority to be used for marking traffic that complies with the marking rule's conditions. The range is from 0 to 7. The default is 0.

7.7.4 SFA Page

The Service Flow Authorization (SFA) functionality handles creation/maintenance of pre-provisioned service flows for MS. It maps the AAA parameters (service profile name) received from the AAA server to pre-configured WiMAX-specific QoS parameters in the NPU.

The SFA page enables configuring and maintaining service flows, including configuring Packet Header Suppression (PHS) rules, multiple service profiles with multiple service flows, and classification rules.

The SFA page includes the following tabs:

- "PHS Rules Tab"
- "Classification Rules Tab"

In addition, the "Service Profile" sub-node of the SFA node enables creating new service profiles and viewing/modifying service profiles.

7.7.4.1 PHS Rules Tab

The PHS Rules tab enables defining rules for Packet Header Suppression (PHS). PHS rules are provisioned on a per-service profile name basis.

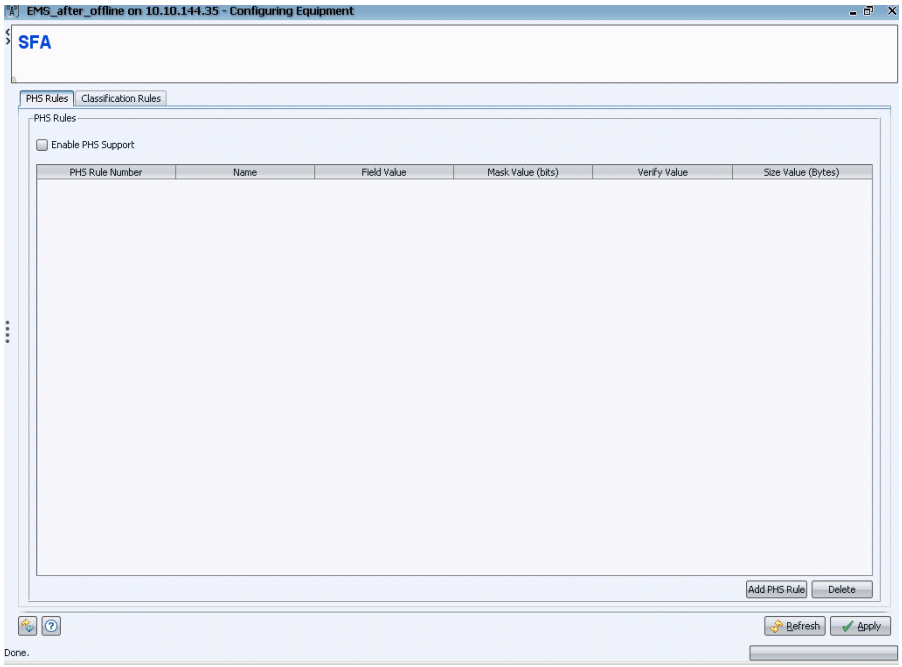


Figure 7-35: SFA Page - PHS Rules Tab

The PHS Rules tab includes the Enable PHS Support check-box and the PHS Rules table:

Parameter	Description
Enable PHS Support	Indicates whether or not PHS is enabled or disabled. This setting applies to all PHS rules. The default is Disable.

The PHS Rules table includes the following parameters:

Parameter	Description
PHS Rule Number	The index number of the PHS rule. An auto sequential number from 1 up to a maximum of 255 generated automatically during rule creation.
Name	The name of the PHS rule. 1-30 characters. The default is null. Must be configured to a valid unique value.
Field Value	The PHSF value, that is, the header string to be suppressed. The default is null. Must be configured to a valid value.
Mask Value (bits)	The PHSM that contains the bit-mask of the PHSF with the bits set that is to be suppressed. The default is null. Must be configured to a valid value.
Verify Value	Indicates whether or not the PHS header is to be verified. The default is No.
Size Value (Bytes)	The size of the header to be suppressed. 0-20. The default is null. Must be configured to a valid value.

An existing PHS Rule cannot be modified.

The following buttons are available at the bottom of the page:

Button	Description
Add PHS Rule	Adds a new entry to the PHS Rules table allowing to configure parameters of the new rule.
Delete	Deletes the selected entry (or several selected entries) from the PHS Rules table. A PHS Rule that is associated to a Classification Rule cannot be deleted.

7.7.4.2 Classification Rules Tab

The Classification Rules tab enables defining the rules that are used to classify packets transmitted on the bearer plane.

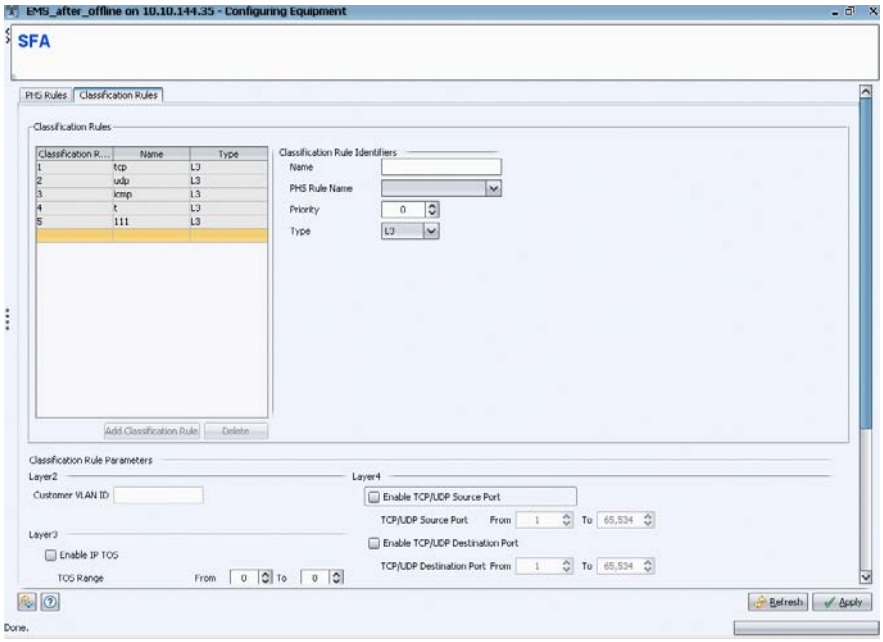


Figure 7-36: SFA Page - Classification Rules Tab

The Classification Rules tab includes the Classification Rules table and the Classification Rule Parameters Editor section.

The Classification Rules table includes the following read-only parameters for each existing rule:

Parameter	Description
Classification Rule Number	The index number of the Classification rule. An auto-sequential number starting from 1 up to a maximum of 100 rules.
Name	The name of the rule.
Type	The type of the rule (L2 or L3).

Select an entry to open the Classification Rule Parameters Editor for the selected rule.

The following buttons are available below the table:

Button	Description
Add Classification Rule	Adds a new entry to the Classification Rules table and opens the Classification Rule Parameters Editor allowing to configure parameters of the new rule.
Delete	Deletes the selected entry (or several selected entries) from the Classificaton Rules table.

The Classification Rule Parameters Editor includes the following parameters:

Parameter	Description
Classification Rule Identifiers	
Name	The name of the classification rule. A string of 1-30 characters. The name of an existing rule cannot be modified.
PHS Rule Name	The Packet Header Suppression (PHS) rule name associated with the classification rule, or null for no PHS Rule. Specify the PHS rule name if you want to perform PHS for this flow. The default is null (none).
Priority	The priority level assigned to the classification rule. The range is 0-255. The default is 0.
Type	The rule's type: L2 or L3. The type of an existing rule cannot be modified. The default is L3.
Classification Rule Parameters	
***Layer 2** (applicable only for L2 rules)*	
Customer VLAN ID	The Customer VLAN ID value to be assigned to the classification rule. The range is 1-4094. The default is null. The Customer VLAN ID of an existing rule cannot be modified.
***Layer 3** (applicable only for L3 rules)*	
Enable IP TOS	Indicates whether the use of TOS-based classification is enabled. The default is Disable.
TOS Range	Relevant only if Enable IP TOS is enabled. Configurable only when Enable IP TOS is disabled. The range of values (From-To) of the IP TOS field from the lowest value to the highest value. Values range is from 0 to 63. The default is From 0, To 0.
TOS Mask	Relevant only if Enable IP TOS is enabled. The mask for IP TOS value.This bit mask is applied to the TOS field received in the IP header to be matched within the configured TOS range. The range is from 0 to 63. The default is 0.

Parameter	Description
Enable IP Protocol	Indicates whether the packet is classified based on the value of the IP protocol. The default is Disable. Cannot be updated in an existing rule.
IP Protocol	Relevant only if Enable IP Protocol is enabled. Configurable only when Enable IP Protocol is enabled. The enabled protocol number. Value is in the range 1-255 (using standard IANA protocol values). The default is 1. Cannot be updated in an existing rule.
Enable IP Source Classifier	Indicates whether the use of an associated IP source address is enabled for the classification rule. The default is Disable. Cannot be updated in an existing rule.
IP Source Address	Relevant only if Enable IP Source Classifier is enabled.Configurable only when Enable IP Source Classifier is enabled. The IP source address enabled for the classification rule. The default is 0.0.0.0 (must be set to a valid value). Cannot be updated in an existing rule.
IP Source Mask	Relevant only if Enable IP Source Classifier is enabled. Configurable only when Enable IP Source Classifier is enabled. The net mask field that is used to specify a range of IP source addresses. The default is 255.255.255.255. Cannot be updated in an existing rule.
Enable IP Destination Classifier	Indicates whether the use of an associated destination address is enabled for the classification rule. The default is Disable. Cannot be updated in an existing rule.
IP Destination Address	Relevant only if Enable IP Destination Classifier is enabled. Configurable only when Enable IP Destination Classifier is enabled. The IP destination address enabled for the classification rule. The default is 0.0.0.0. Cannot be updated in an existing rule.
IP Destination Mask	Relevant only if Enable IP Destination Classifier is enabled. Configurable only when Enable IP Destination Classifier is enabled. The net mask field that is used to specify a range of IP destination addresses. The default is 255.255.255.255. Cannot be updated in an existing rule.
Layer 4 *(applicable only for L3 rules)*	
Enable TCP/UDP Source Port	Indicates whether the use of a range of source ports is enabled for the classification rule. The default is Disable. Cannot be updated in an existing rule. If enabled, then Enable IP Protocol is set to enable. Protocol can be either 6 (TCP) or 17 (UDP).
TCP/UDP Source Port:	Relevant only if Enable TCP/UDP Source Port is enabled. Configurable only when Enable TCP/UDP Source Port is enabled. The range of values (From-To) of the source ports from the lowest value to the highest value. Values range is from 1 to 65535. The default is From 1, To 65535. Cannot be updated in an existing rule.

Parameter	Description
Enable TCP/UDP Destination Port	Indicates whether the use of a range of destination ports is enabled for the classification rule. The default is Disable. Cannot be updated in an existing rule. If enabled, then Enable IP Protocol is set to enable. Protocol can be either 6 (TCP) or 17 (UDP).
TCP/UDP Destination Port	Relevant only if Enable TCP/UDP Destination Port is enabled. Configurable only when Enable TCP/UDP Destination Port is enabled. The range of values (From-To) of the destination ports from the lowest value to the highest value. Values range is from 1 to 65535. The default is From 1, To 65535. Cannot be updated in an existing rule.

7.7.4.3 Service Profile

The NPU allows for guaranteed end-to-end QoS for user traffic across the ASN. The QoS approach is connection-oriented, whereby user traffic is classified into “service flows”. A service flow is a unidirectional stream of packets, either in the downlink or uplink direction, associated with a certain set of QoS requirements such as maximum latency. The QoS requirements for service flows are derived from “service profiles” defined by the operator. A service profile is a set of attributes shared by a set of service flows. For instance, an operator might define a service profile called “Internet Gold” that will include QoS and other definitions to be applied to service flows associated with users subscribed to the operator's “Internet Gold” service package.

The factory default configuration includes an ‘empty” (no defined Service Flows) Service Profile with the name Default. If enabled, it will be used if profile descriptor is missing in service provisioning or if received profile descriptor is disabled (unauthenticated mode). Up to 63 additional Service Profiles may be created.

The Service Profile node enables creating/deleting service profiles (refer to “Creating/Deleting a Service Profile” below and opening the Service Profile page for one of the existing service profiles (refer to “Service Profile Page”).

7.7.4.3.1 Creating/Deleting a Service Profile

To create a new service profile:

1 Right-click the Service Profile sub-node in the navigation tree and select **Create** to open the New Service Profile window.

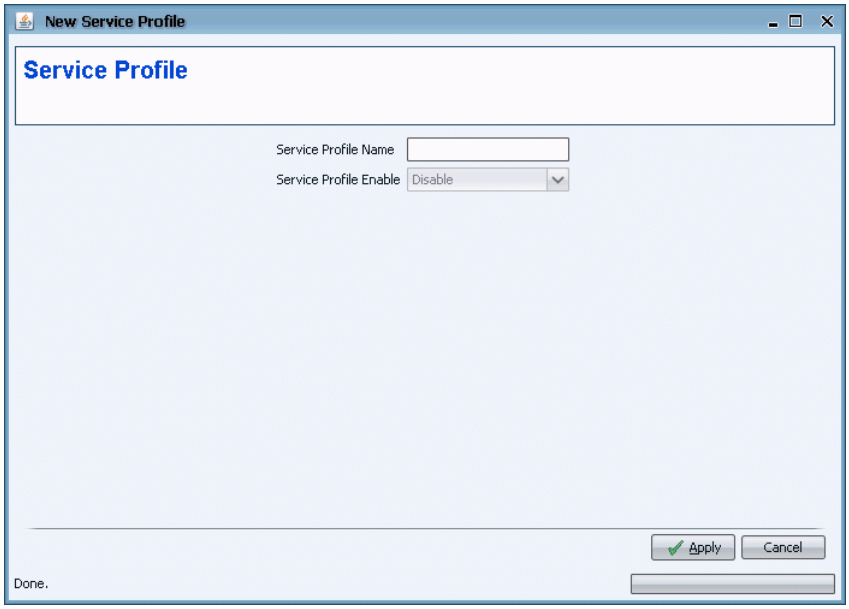


Figure 7-37: New Service Profile Window

2 In the New Service Profile window, define the Service Profile Name (1-30 characters) and click **Apply**. The new service profile will be added to the list of service profiles available under the Service Profile sub-node, with the default status of Disable.

3 To configure the parameters of the new service profile, click on the service profile name in the navigation tree to open the Service Profile page for this service profile.

Up to a maximum of 64 service profiles can be created.

To delete a Service Profile:

To delete a service profile, right-click the required service profile entry in the navigation tree and select **Delete**. You will be request to confirm the operation.

Note that the Default (pre-configured) service profile cannot be deleted.

7.7.4.3.2 Service Profile Page

The Service Profiles page enables viewing the Service Profiles in the device's database, defining new Service Profiles, and editing or deleting existing Service Profiles.

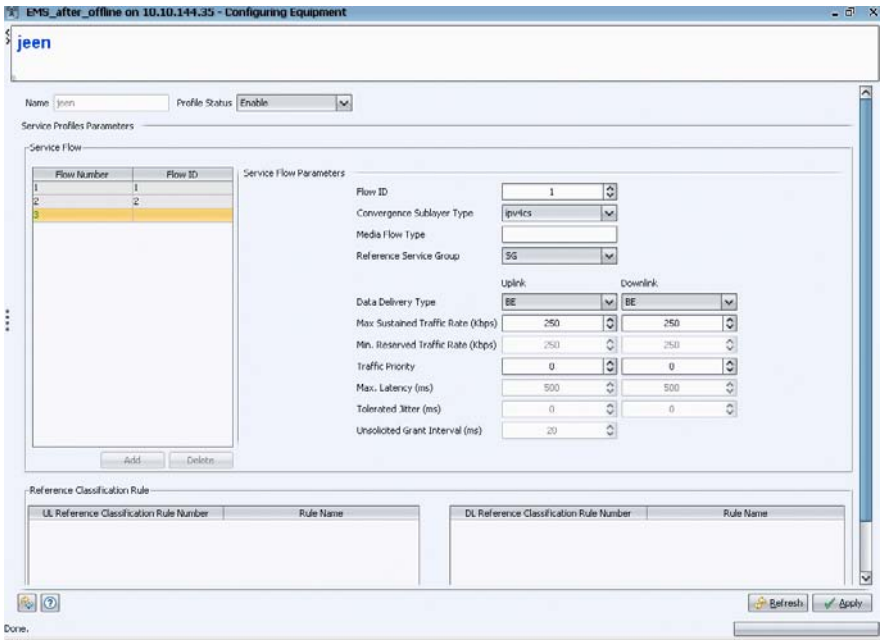


Figure 7-38: Service Profile Page

The Service Profiles page includes the following sections:

- "General Service Profile Parameters"
- "Service Flow Table"
- "Service Flow Parameters Editor"
- "Reference Classification Rule Section"

7.7.4.3.2.1 General Service Profile Parameters

The General Service Profile parameters at the top of the page are:

Parameter	Description
Name	The read-only name of the service profile.
Profile Status	Indicates whether the profile is enabled or disabled.

7.7.4.3.2.2 Service Flow Table

Service flows are unidirectional stream of packets, either in the downlink or uplink direction, associated with a certain set of QoS requirements such as maximum latency and minimum rate. Based on certain classification rules, service flows are transported over the R1 air interface in 802.16e connections, identified by connection IDs, and identified by GRE keys over the R6 interface in GRE tunnels. In addition, the ASN-GW can mark outgoing traffic in the R3 interface for further QoS processing within the CSN.

The system supports two types of service flows according to the convergence sublayer (CS) type: IP CS and VLAN CS. An IP CS service flow can be associated only with an IP service group. A VLAN CS service flow can be associated only with a VPWS (Transparent/QinQ/Mapped) service group. VLAN CS service flows can be configured only for the Default Service Profile.

Up to 12 Service Flows can be defined for each Service Profile.

The Service Flow table includes the following read-only parameters for each service flow of the service profile:

Parameter	Description
Flow Number	The index number of the service flow. An auto-sequential number from 1 up to a maximum of 12 generated automatically during creation of a new service flow.
Flow ID	The flow ID of the service flow for which the service flow configuration mode is enabled.

Select an entry to open the Service Flow Parameters Editor and enable the Reference Classification Rule Editor for the selected service flow.

The following buttons are available below the table:

Button	Description
Add	Adds a new entry to the table and opens the Service Flow Parameters Editor and enable the Reference Classification Rule Editor, allowing to configure parameters for the new service flow.
Delete	Deletes the selected entry (or several selected entries) from the table.

7.7.4.3.2.3 Service Flow Parameters Editor

The Service Flow Parameters Editor includes the following parameters:

Parameter	Description
Flow ID	The flow ID of the service flow. A number in the range 1-255, unique per service profile. The Flow ID of an existing service flow cannot be changed.
Convergence Sublayer Type	Convergence Sublayer Type: IPv4CS or vlancs. VLANCS service flows can be defined only for the Default Service Profile. The default is IPv4CS. The Convergence Sublayer Type of an existing service flow cannot be changed.
Media Flow Type	The type of media carried by the service flow. An optional string of up to ~~32~~15 characters. The default is null.
Reference Service Group	The Name of an existing service group to be used by the service flow. VPWS Service Groups are applicable only for VLAN CS Service Flows of the Default Service Profile.
Reference Service Interface	The Name for an existing QinQ service interface. Applicable only if the assigned Service Group is of type VPWS-QinQ (in a VLANCS Service Flow of the Default Service Profile).
Uplink/Downlink	
Data Delivery Type	The data delivery type for uplink/downlink traffic carried by the service flow. The available options are UGS; RTVR; NRTVR; BE; ERTVR and ANY. The default is BE.
Max. Sustained Traffic Rate (Kbps)	The maximum sustained traffic rate, in Kbps, for uplink/downlink traffic carried by the service flow. The range is 10-40000. The default is 250. Relevant only for service flows with the appropriate uplink/downlink data delivery type (NRTVR, RTVR, BE, ERTVR, ANY)
Traffic Priority	The traffic priority to be applied to the uplink/downlink traffic carried by the service flow. The range is 0-7. Not applicable for UGS data delivery type. The default is 0.
Min. Reserved Traffic Rate (Kbps)	The minimum reserved traffic rate, in Kbps, for uplink/downlink traffic carried by the service flow. The range is 0-40000. The default is 250. Relevant only for service flows with the appropriate uplink/downlink data delivery type (UGS, NRTVR, RTVR, ERTVR). For NRTVR, RTVR and ERTVR-cannot be higher than the Max. Sustained Traffic Rate.
Max. Latency (ms)	The maximum latency in ms allowed in the uplink/downlink service flow. The range is 0- 4294967295. The default is 500 (If data delivery type is ERTVR or UGS, the default value should be 90 ms). Relevant only for service flows with the appropriate uplink/downlink data delivery type (UGS, RTVR, ERTVR).

Parameter	Description
Tolerated Jitter (ms)	the maximum delay variation (jitter) in milliseconds for this uplink/downlink service flow. The range is 0- 4294967295. The default is 0. Relevant only for service flows with the appropriate uplink/downlink data delivery type (UGS, ERTVR).
Unsolicited Grant Interval (ms)	The nominal interval in ms between successive data grant opportunities for this uplink service flow. The range is 0-65535. The default is 20. Must be lower than Uplink Max. Latency. Relevant only for uplink service flows with the appropriate uplink data delivery type (UGS, ERTVR).

7.7.4.3.2.4 Reference Classification Rule Section

The Reference Classification Rule section enables managing rules for the classification of uplink and downlink traffic.

The Reference Classification Rule section includes two tables, one listing the UL Reference Classification Rules and the other listing the DL Reference Classification Rules.

Note that for VLANCS service flows the linked uplink and downlink classification rules should be the same. This is because the VLANCS classification rules define the CVID (Customer VLAN ID), that should be the same for uplink and downlink flows.

These tables include the following parameters:

Parameter	Description
UL/DL Reference Classification Rule Number	The index number of the UL or DL Reference Classification rule. An auto-sequential number from 1 up to a maximum of 6 generated automatically during rule addition.
Rule Name	The name of the associated Classification Rule. The available options include all the existing Classification Rules (see “Classification Rules Tab” on page 230). The Rule Name of an existing Reference Classification Rule cannot be modified.

The Reference Classification Rule section also includes the following buttons beneath each of the tables:

Button	Description
Add UL Rule / *Add DL Rule*	Adds a new entry to the respective table.
Delete	Deletes the selected entry (or several selected entries) from the respective table.

7.7.5 Hot Lining Page

Hot Lining provides a WiMAX operator with the capability to efficiently address issues with users that would otherwise be unauthorized to access packet data services.

When Hot Lining is enabled, the ASN-GW implements UL/DL traffic filters. These traffic filters are dynamically applied and removed per MSID. Triggers for filter application/removal are relevant RADIUS messages from the AAA server. Filter's action on traffic shall be one of the following: pass, drop, or HTTP-redirect the traffic. The ASN-GW shall apply the pre-configured profile according to the Hotline-Profile-ID as delivered from the AAA server.

If filtering is applied, uplink subscriber's packet that does not match any UL-filter-rule shall be dropped. Downlink subscriber's packet that does not match any DL-filter-rule shall be dropped.

DHCP traffic in UL and DL direction is always passed.

Anti-spoofing function filtering of UL traffic is performed before the Hot Lining filtering.

Hot Lining is not applied on an MS with VLAN or Ethernet Services. If the ASN-GW receives Access-Accept message, which includes any Hot Lining attributes, and the subject MS is granted at least one flow with CS-type of VLAN or Ethernet, the ASN-GW shall initiate De-registration of the MS.

MSs with tunneled traffic are not supported by Hot Lining.

When Hot Lining is disabled in ASN-GW, it shall not include Hot Lining Capabilities attributes in any Access-Request messages. If AAA replies with Access-Accept message which includes any Hot Lining attributes, ASN-GW shall initiate De-registration of the MS.

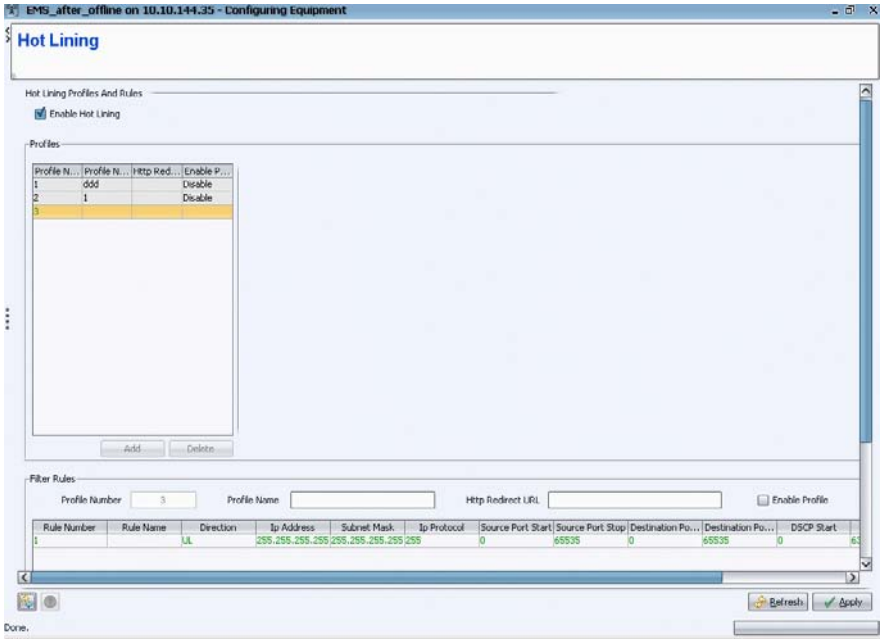


Figure 7-39: Hot Lining Page

The Hot Lining page is comprised of the following components:

- "Enable Hot Lining"
- "Profiles Table"
- "Profile Editor"
- "Filter Rules"

7.7.5.1 Enable Hot Lining

Parameter	Description
Enable Hot Lining	Enable/Disable the Hot Lining feature. The following Hot Lining parameters are configurable only if Hot Lining is enabled. The default is Enable.

7.7.5.2 Profiles Table

The Hot Lining Profiles table includes the following read-only parameters for each entry:

Parameter	Description
Profile Number	The index number of the hot lining profile. An auto-sequential number from 1 up to a maximum of 10 generated automatically during filter addition.
Profile Name	The unique (per BTS) name of the profile.
HTTP Redirect URL	The HTTP redirect URL to be used by filter rules with HTTP Redirect action (or null).
Enable Profile	The status of the hot lining profile (Disable/Enable).

The following buttons are available below the table:

Button	Description
Add	Adds a new entry to the table, allowing to configure the parameters of the new profile in the profile Editor section.
Delete	Deletes the selected entry (or several selected entries) from the table.

Select an entry to open the Profile Editor and the Filter Rules table for the selected Profile.

7.7.5.3 Profile Editor

The Profile Editor includes the following parameters for the selected profile:

Parameter	Description
Profile Number	The index number of the hot lining profile. An auto-sequential number from 1 up to a maximum of 10 generated automatically during filter addition.
Profile Name	The unique (per BTS) name of the profile. A string of 1-30 characters. The name of an existing profile cannot be modified.
HTTP Redirect URL	The HTTP redirect URL to be used by filter rules with HTTP Redirect action. This is the Redirection location to be used in Http-Redirection message. Must be configured (URL in ASCII string format) if in any of the filter rules associated with the profile the configured action is HTTP Redirect. the string should be start with http:// or https://.
Enable Profile	Enables/Disables the hot lining profile. The default is Disable. Profile parameters can be updated only when Enable Profile is set to Disable.

7.7.5.4 Filter Rules

Up to 16 Filter Rules may be associated to each Hot Lining Profile.

Filter Rules can be added/updated only when the Enable Profile parameter in the device is set to Disable.

The Filter Rules table includes the following parameters for each entry:

Parameter	Description
Rule Number	The index number of the filter rule. An auto-sequential number generated automatically during filter addition. The Rule Number serves also as the rule priority, affecting the order of checking the rules for a match. The first found match is applied.
Rule Name	The unique (per hot line profile) name of the rule. A string of 1-30 characters. The name of an existing filter rule cannot be modified.
Direction	The direction for which the rule should be applied: Uplink or Downlink. The default is Uplink.
IP Address	If Direction is Downlink then this is the downlink Source IP Address. If Direction is Uplink then this is the uplink Destination IP Address 255.255.255.255 means not applicable (ignore this condition). The default is 255.255.255.255.
Subnet Mask	The Subnet Mask associated with the configured IP Address. The default is 255.255.255.255.
IP Protocol	The IP protocol number (1-255). 255 means “any” (ignore this condition). The default is 255.
Source Port Start	The minimum value of source TCP/UDP port range. The default is 0.
Source Port Stop	The maximum value of source TCP/UDP port range. The default is 65535.
Destination Port Start	The minimum value of destination TCP/UDP port range. The default is 0.
Destination Port Stop	The maximum value of destination TCP/UDP port range. The default is 65535.
DSCP Start	The minimum value of DSCP range. The default is 0.
DSCP Stop	The maximum value of DSCP range. The default is 63.
Filter Action	Action to be performed on packets that match the rule: Pass, Drop, HTTP Redirect. The default is Pass. HTTP Redirect is applicable only if Direction is Uplink. If set to HTTP Redirect then HTTP Redirect Address (see “Profiles Table” above) must be defined.

The following buttons are available below the table:

Button	Description
Add	Adds a new entry to the table, allowing to configure new rule’s parameter.
Delete	Deletes the selected entry (or several selected entries) from the table.

7.8 BS

The BS node is not applicable for Mini-Centralized ASN-GW.

The BS node enables the configuration of various properties related to radio transmissions, connectivity and services of each BS.

The BS node includes the following subnode and page for each existing BS #:

- "Radio"
  - » "Radio Basic Page"
  - » "Radio Advanced Page"
- "R6/R8 Bearer Interface Page"

IMPORTANT

Many BS parameters are applied only after resting the AU. This is indicated by a pop-up message. If applicable, do not forget to reset the AU after completing all modifications (refer to "AU Control Tab" on page 191).

Some BS parameters should be advertised to all neighbors. If a pop-up message indicating the need for updating neighbors appeared during modification of parameters, do not forget to update all neighbors after completing all modifications (refer to "Neighbor List" on page 261).

In addition, from the navigation tree you can create new BS entities or delete an existing BS entity (see "Creating/Copying/Deleting a BS" below).

Note that you can create and delete also the single BS of the Micro Outdoor BTS (required for defining/changing the BS ID).

7.8.1 Creating/Copying/Deleting a BS

To create a new BS:

1 Right-click the BS node in the navigation tree and select **Create** to open the **New BS** window.

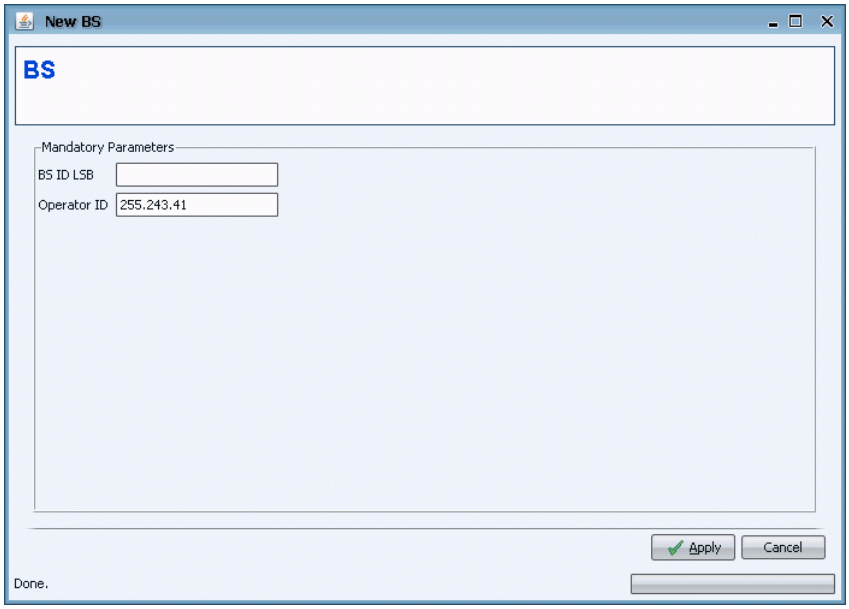


Figure 7-40: New BS Window

2 Configure the mandatory identification parameters of the BS in the New BS window:

Parameter	Description
BS ID LSB	The unique identifier of the BS. The management system will reject a BS ID LSB already assigned to another BS in the managed wireless network. The format is x.y.z, where x, y and z are in the range from 0 to 255.
Operator ID	The unique Identifier of the wireless network operator. The same Operator ID must be used by all BSs in the managed wireless network. The format is x.y.z, where x, y and z are in the range from 0 to 255. The default Operator ID is 255.243.41. Once the user enters a new ID for the first created BS it becomes the new default for new BSs.

3 Click OK. The new BS will be added to the list of BS # available in the BS node.

4 To complete the creation of the new BS you should select the newly added BS entry and complete the configuration of the mandatory Bandwidth and Central frequency parameters (see "Radio Basic Page - General Tab" on page 248). After clicking **Apply** you will be prompted to configure some additional mandatory parameters in the Airframe Structure General tab and Air Frame Structure Zones tab. After configuring the requested parameters, click **Apply** again.

To copy an existing BS:

1 The Copy BS feature enables creation of a new BS based on the configuration of an existing BS. To copy a BS, right-click the BS node in the navigation tree and select **Copy BS** to open the **BS Selector** window.

2 From the list of available BSs, select the BS you want to copy and click **Select.** The **Copy BS** window will open with the values of the source BS used for BS ID LSB and Operator ID parameters.

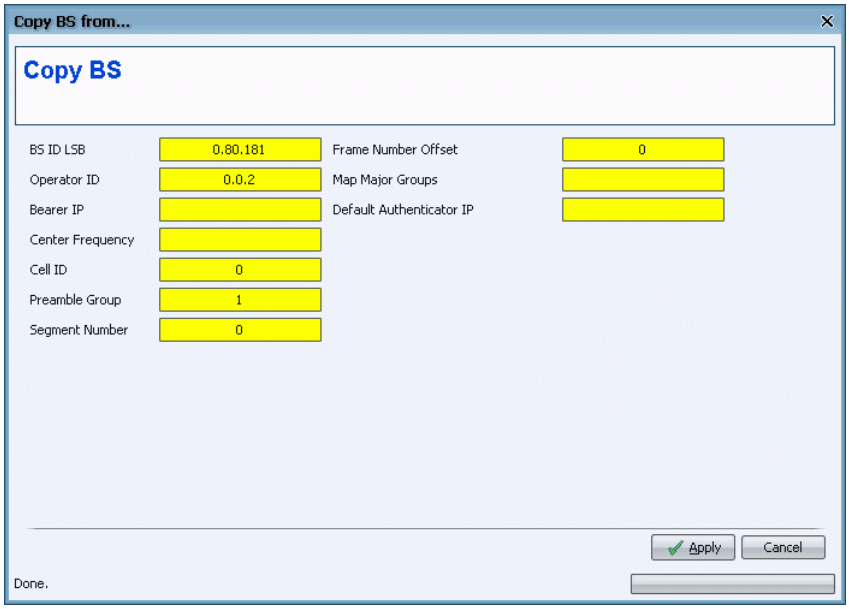


Figure 7-41: Copy Existing BS Window

3 Configure the required parameters for the new BS (all other parameters will be copied from the source BS and may be changed later):

Parameter	Description
BS ID LSB	The unique identifier of the BS. Replace the BS ID LSB of the source BS with a new value. The management system will reject a BS ID LSB already assigned to another BS in the managed wireless network. The format is x.y.z, where x, y and z are in the range from 0 to 255. The default is the BS ID of the source BS (must be changed to a unique value).

Parameter	Description
Operator ID	The unique Identifier of the wireless network operator. The same Operator ID must be used by all BSs in the managed wireless network. Typically the Operator ID (copied from the source BS) should not be changed. The format is x.y.z, where x, y and z are in the range from 0 to 255. The default is the Operator ID of the source BS.
Bearer IP	The IP address of the bearer interface of the BS.
Center Frequency	The center of the frequency band in which the BS will transmit, in MHz. The available values, in accordance with the bands supported by different ODUs, are: ■ 2022.5 to 2217.5 in steps of 0.125 ■ 2302.5 to 2397.5 in steps of 0.125 ■ 2487.5 to 2687.5 in steps of 0.125 ■ 3302.5 to 3397.5 in steps of 0.125 ■ 3402.5 to 35797.5 in steps of 0.125 See also note below regarding dependency on configured Bandwidth
Cell ID	The Cell ID (IDCell) used for preamble selection. The range is from 0 to 31.
Preamble Group	The preamble group (1 or 2). A value of 2 is applicable only for the following combinations of Segment Number and Cell ID values: Segment Number=0, Cell ID=0, 3, 6, 9, 12, 15. Segment Number=1, Cell ID=1, 4, 7, 10, 13, 16. Segment Number=2, Cell ID=2, 5, 8, 11, 14, 17
Segment Number	The segment (BS) number in a three sector BS (0-2). This number influences the values available for Preamble Group selection (see above) preamble selection and the configuration of Map Major Groups (see below) used for the FDC transmission.
Frame Number Offset	Controls the offset applied between the internal frame count and the reported frame number. The range is from 0 to 15.

Parameter	Description
Map Major Groups	6 bits representing the selection of Map Major Groups 0 to 5 where the left-most bit (MSB) represents Major Group 5. If BW=5 MHz, bits 1, 3 and 5 are not relevant (grayed out). Bits 0, 2 and 4 must be set (checked). Configure 111111. If BW=7/10 MHz with reuse 1, all bits (0 to 5) must be set (checked). Configure 111111. For BW=7/10 MHz with Reuse 3: ■ If Segment Number (see "Radio Basic Page-Air Frame Structure General Tab" on page 250) is 0, then only bits #0 and 1 should be set (checked). Configure 000011. ■ If Segment Number is 1, then only bits #2 and 3 should be set (checked). Configure 001100. ■ If Segment Number is 2, then only bits #4 and 5 should be set (checked). Configure 110000
Default Authenticator IP	The IP address of the default authenticator ASN-GW.

NOTE

The available values for Center Frequencies indicated above are for a Bandwidth of 5 MHz. For a different bandwidth, the actually valid values are from f1+1/2BW to f2-1/2BW, where f1 is the lowest frequency of the ODU's radio band, f2 is the highest frequency of the ODU's band, and BW is the configured bandwidth. Note that ODU-2305-2360-000N-36-1x1-Y-0 includes two bands: 2305-2320, 2345-2360 MHz.

To delete a BS:

To delete a BS, right-click the required BS # entry in the navigation tree and select **Delete**. You will be request to confirm the operation.

IMPORTANT

An associated BS (specified in a Site Sector Association) cannot be deleted. For more details refer to "Site Sector <#> Page" on page 279.

To delete a BS from its neighbors:

To delete a BS from its neighbors (without deleting it entirely), right-click the BS entry in the navigation tree and select **Delete from neighboring**.

7.8.2 Radio

The Radio node includes the following pages:

- "Radio Basic Page"
- "Radio Advanced Page"

7.8.2.1 Radio Basic Page

The Radio node's Basic page includes the following tabs:

- "Radio Basic Page - General Tab"
- "Radio Basic Page-Air Frame Structure General Tab"
- "Radio Basic Page-Air Frame Structure Zones Tab"
- "Radio Basic Page-Mobility Tab"

7.8.2.1.1 Radio Basic Page - General Tab

The General Tab enables defining the basic radio parameters.

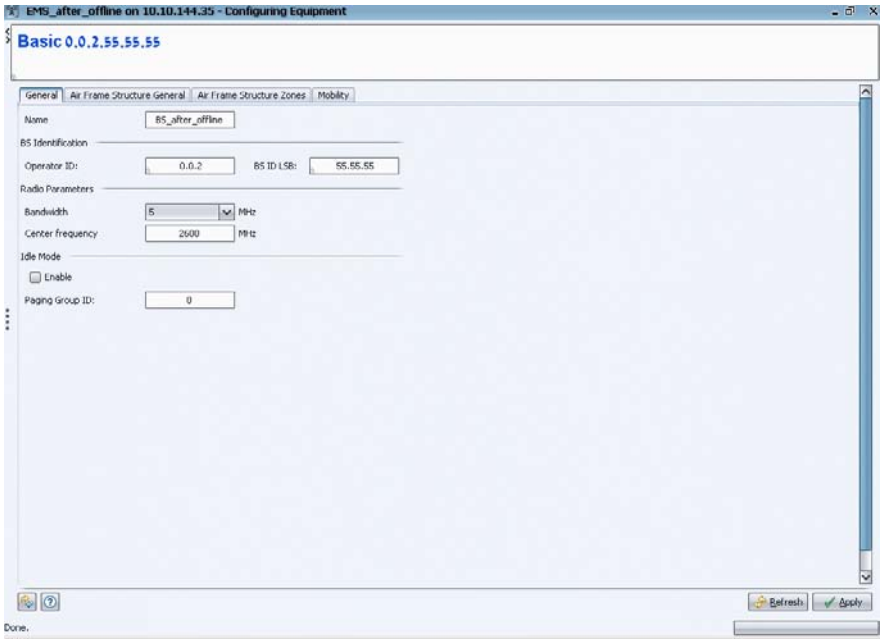


Figure 7-42: Radio Basic Page - General Tab

The General tab includes the following parameters:

Parameter	Description
Name	The name of the BS. An optional descriptive parameter. A string of up to 32 printable characters.
BS Identification	
Operator ID	Read-only. The unique operator identifier. The same Operator ID must be used by all BSs throughout the radio access network.
BS ID LSB	Read-only. The unique ID of the BS. This ID must be unique within the radio access network.
Radio Parameters	
Bandwidth	The BS channel bandwidth (5 MHz, 7 MHz, 10MHz). The default is 5 MHz. A bandwidth of 7 MHz is not applicable for ODUs in the 2.x GHz band.
Center frequency	The center of the frequency band in which the BS will transmit, in MHz. The available values, in accordance with the bands supported by different ODUs, are: ■ 2022.5 to 2217.5 in steps of 0.125 ■ 2302.5 to 2397.5 in steps of 0.125 ■ 2487.5 to 2687.5 in steps of 0.125 ■ 3302.5 to 3397.5 in steps of 0.125 ■ 3402.5 to 3797.5 in steps of 0.125 See also note below regarding dependency on configured Bandwidth
Idle Mode	
Enable	Use the check-box to enable/disable the idle mode feature. Note: The same idle mode status must be applied for the entire network. The default is Disable.
Paging Group ID	The Paging Group ID of the BS. Applicable only if Idle Mode is enabled. The range is from 0 to 65535. Must be set to a value other than 0 (the default) if Idle Mode is enabled. Must be unique in the network (different Paging Group ID for each BS).

NOTE

The available values for Center Frequencies indicated above are for a Bandwidth of 5 MHz. For a different bandwidth, the actually valid values are from f1+1/2BW to f2-1/2BW, where f1 is the lowest frequency of the ODU's radio band, f2 is the highest frequency of the ODU's band, and BW is the configured bandwidth. Note that ODU-2305-2360-000N-36-1x1-Y-0 includes two bands: 2305-2320, 2345-2360 MHz.

After clicking **Apply**, you may be prompted to properly configure some additional parameters in the Airframe Structure General tab and/or the Air Frame Structure Zones tab. After configuring the requested parameters, click Apply again.

In addition, following any change in the Bandwidth, delete the current Distance triggers (see "Radio Basic Page-Mobility Tab" on page 259" and redefine them.

7.8.2.1.2 Radio Basic Page-Air Frame Structure General Tab

The Air Frame Structure General tab defines the general airframe parameters.

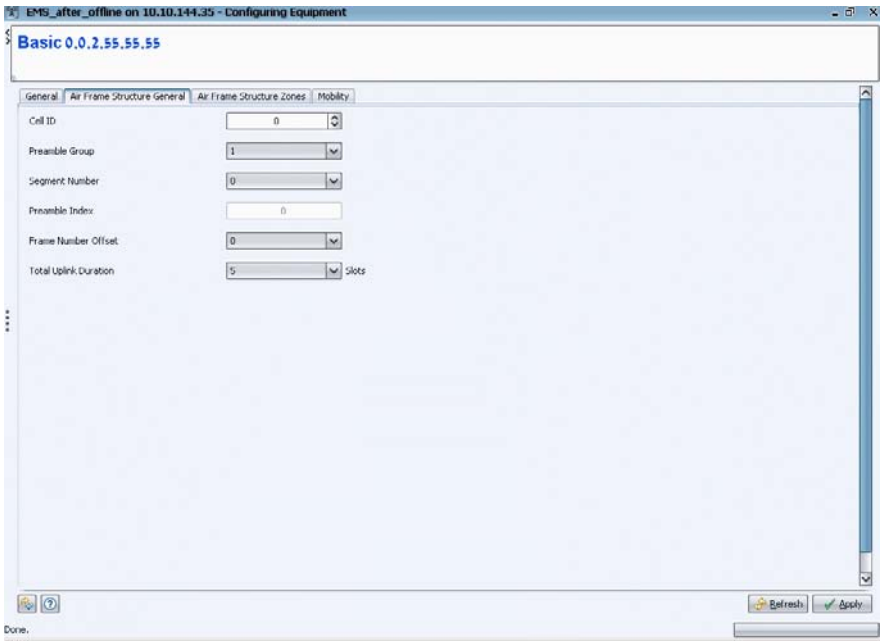


Figure 7-43: Radio Basic Page - Air Frame Structure General Tab

The Air Frame Structure General tab includes the following parameters:

Parameter	Description
Cell ID	The Cell ID (IDCell) used for preamble selection. The range is from 0 to 31. The default is 0.

Parameter	Description
Preamble Group	The preamble group (1 or 2). A value of 2 is applicable only for the following combinations of Segment Number and Cell ID values: Segment Number=0, Cell ID=0, 3, 6, 9, 12, 15. Segment Number=1, Cell ID=1, 4, 7, 10, 13, 16. Segment Number=2, Cell ID=2, 5, 8, 11, 14, 17 The default is 1.
Segment Number	The segment (BS) number in a three sector BS (0-2). This number influences the values available for Preamble Group selection (see above) and the configuration of Map Major Groups (see "Radio Basic Page-Air Frame Structure Zones Tab" on page 252) used for the FDC transmission. The default is 0.
Preamble Index	Read-only. The Preamble Index used by the BS (0-113).
Frame Number Offset	Controls the offset applied between the internal frame count and the reported frame number. The available options are Zero and Random. If Random is selected, the AU will choose a random number between 0 to 15. The default is zero (0).
Total Uplink Duration	The total duration of the uplink in a frame, in slots (one slot equals 3 symbols). To avoid BS-BS interference, the ul-dl-allocation must be identical in all BSs in a geographical region. The range is 4-7 or 10 for bandwidth of 5 or 10MHz, 3-5 or 7 for bandwidth of 7MHz. The default is 6. After each change in the Bandwidth parameter the value is changed to <blank> and must be configured to a proper value.

7.8.2.1.3 Radio Basic Page-Air Frame Structure Zones Tab

The Air Frame Structure Zones tab enables configuration of the map zone parameters.

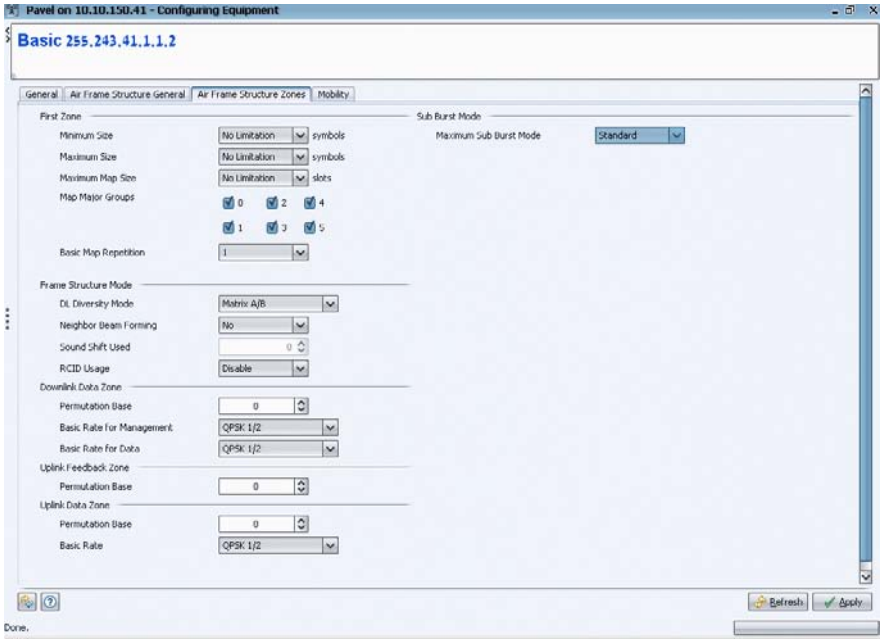


Figure 7-44: Radio Basic Page - Air Frame Structure Zones Tab

The Air Frame Structure Zones tab includes the following parameters:

Parameter	Description
First Zone	
Minimum Size	The initial size (in symbols) of the first zone. When reuse 3 is used within first zone, this parameter should be equal across all BSs within deployment. The available options are 2, 4,....34 (2xN where N=1-17) or No Limitation. The default is No Limitation. See limitations in Table 7-7 below. Other values should be avoided. In the current release this is the actual size of the first zone. For reuse 1 the default (no limitation) can be used-the actual size will be set dynamically according to the configuration. For reuse 3 a specific value must be configured.

Parameter	Description
Maximum Size	Maximum size (in symbols) for first zone. Used mainly for performance control capability within frame. The available options are 2, 4,....34 (2xN where N=1-17) or No Limitation. The default is No Limitation. Maximum Size cannot be lower than Minimum Size. In the current release the value of this parameter is ignored First Zone size is defined only by Minimum Size parameter.
Maximum Map Size	Limits the maximum size of maps (in slots). The available options are 10, 20,...300 (10xN where N=1-30) or No Limitation. The default is No Limitation.
Map Major Groups	The major groups allocated to the BS for maps transmission, as indicated by the selection of the corresponding check-boxes. If BW=5 MHz, bits 1, 3 and 5 are not relevant (grayed out). Bits 0, 2 and 4 must be set (checked). If BW=7/10 MHz with reuse 1, all bits (0 to 5) must be set (checked). For BW=7/10 MHz with Reuse 3: ■ If Segment Number (see "Radio Basic Page-Air Frame Structure General Tab" on page 250) is 0, then only bits #0 and 1 should be set (checked). ■ If Segment Number is 1, then only bits #2 and 3 should be set (checked). ■ If Segment Number is 2, then only bits #4 and 5 should be set (checked). The default is all bits unchecked.
Basic Map Repetition	The basic repetition used in the transmission of the maps using QPSK 1/2. The available options are 1, 2, 4 and 6. (1 means no repetitions). The default is 6.
Frame Structure Mode	
DL Diversity Mode	The downlink diversity mode used by the system: Matrix A/B or Beam Forming. The Beam Forming option is not applicable for 2-channels AU (Macro Outdoor BTS) and Micro Outdoor BTS. The default is Matrix A/B. Beam Forming is a licensed feature: You will be prompted to enter the required password for activating Beam Forming mode.

Parameter	Description
Neighbor Beam Forming	Applicable only for Macro Indoor/Outdoor units operating in MIMO Matrix A/B mode. The beam forming mechanism is based on symmetry in performance between uplink and down link. To compensate for possible differences due to HW of the ODU, a special low-level calibration signal is transmitted periodically in each link. During the time this calibration signal is transmitted all other radio links of the same BS and all its neighbors should not transmit, to reduce potential interference. The Beam Forming mechanism ensures that all neighboring BSs operating in Beam Forming mode will enter into silent mode when necessary. A unit operating in Matrix A/B mode should enter into silent mode when necessary (based on frame number information) only if it has neighboring BSs operating in Beam Forming mode. The Neighbor Beam Forming parameter Indicates whether any of the neighboring BSs operates in Beam Forming mode. The default is No.
Sounding Shift Used	Read-only. Applicable only for Beam forming DL diversity mode. The sounding zone shift used by the Beam Forming mechanism (0-7). MSs are transmitting sounding frames in the uplink to enable the BS to decide the weights to be allocated for downlink transmissions. Sounding is sequence of Golay sequence codes. The Sounding Shift is the “seed” for this sequence, and different Sounding Shifts are used, providing reduced interference among neighboring BSs.
RCID Usage	Each transmitted MAP includes allocations for each MS it served, using the MS’s CID for identifying each MS. The original CID includes 16 bits, which is significantly more than practically needed since a maximum of 500 MSs can be served by each BS. To reduce overhead, a smaller number of bits can be used, based on RCID (Reduced CID) defined in the standard. This mechanism can be used only if all MSs served by the BS support RCID. When enabled, CIDs of either 7 or 11 bits will be dynamically used, according to the current number of MS served at each given moment. The RCID Usage defines whether RCID is enabled or disabled. The default is Disable.
Downlink Data Zone	
Permutation Base	The permutation base used in the downlink data zone. The valid range is from 0 to 31. The default is 0.

Parameter	Description
Basic Rate for Management	The downlink basic rate for unicast and broadcast management. ■ QPSK 1/2 Repetition 6 ■ QPSK 1/2 Repetition 4 ■ QPSK 1/2 Repetition 2 ■ QPSK 1/2 ■ QPSK 3/4 ■ 16-QAM 1/2 ■ 16-QAM 3/4 ■ 64-QAM 1/2 ■ 64-QAM 2/3 ■ 64-QAM 3/4 ■ 64-QAM 5/6 The default is QPSK 1/2

Parameter	Description
Basic Rate for Data	The downlink basic rate for data. ■ QPSK 1/2 Repetition 6 ■ QPSK 1/2 Repetition 4 ■ QPSK 1/2 Repetition 2 ■ QPSK 1/2 ■ QPSK 3/4 ■ 16-QAM 1/2 ■ 16-QAM 3/4 ■ 64-QAM 1/2 ■ 64-QAM 2/3 ■ 64-QAM 3/4 ■ 64-QAM 5/6 The default is QPSK 1/2
Uplink Feedback Zone	
Permutation Base	The permutation base used in the uplink feedback zone. The valid range is from 0 to 69. The default is 0.
Uplink Data Zone	
Permutation Base	The permutation base used in the uplink data zone. The valid range is from 0 to 69. The default is 0.

Parameter	Description
Basic Rate	The uplink basic rate. ■ QPSK 1/2 Repetition 6 ■ QPSK 1/2 Repetition 4 ■ QPSK 1/2 Repetition 2 ■ QPSK 1/2 ■ QPSK 3/4 ■ 16-QAM 1/2 ■ 16-QAM 3/4 ■ 64-QAM 1/2 ■ 64-QAM 2/3 ■ 64-QAM 3/4 ■ 64-QAM 5/6 The default is QPSK 1/2
Sub Burst Mode	
Maximum Sub Burst Mode	The maximum size of a downlink sub-burst. The value of this parameter affects the achievable throughput in MIMO B point-to-point links (one MS) as follows: Basic: up to 12 Mbps Standard: up to 20 Mbps Enhanced: up to 25 Mbps. Trial: up to 30 Mbps. Maximum throughput for two MSs may be increased to up to 16Mbps per MS when set to Standard, Enhanced or Trial. The default is Basic

Recommended values for First Zone Minimum Size and Maximum Size:

Table 7-7: First Zone Minimum Size Recommended Value Range

Bandwidth (MHz)	First Zone Scheme*	Basic Map Repetition	Minimum Size (symbols) (up to a maximum of Y as defined below)
7/10	Full Loading	6	No Limitation or 8+2N
		4	No Limitation or 6+2N
		2	No Limitation or 4+2N
		1	No Limitation or 4+2N
	Reuse 1/3	6	N/A (non trivial configuration)
		4	8+2N
		2	6+2N
		1	6+2N
5 MHz	Full Loading	6	N/A (non trivial configuration)
		4	No Limitation or 8+2N
		2	No Limitation or 6+2N
		1	No Limitation or 4+2N
	Reuse 1/3	6	N/A (non trivial configuration)
		4	N/A (non trivial configuration)
		2	N/A (non trivial configuration)
		1	N/A (non trivial configuration)

* First Zone Scheme is being determined by the selected Map Major Groups:

- For 7/10 MHz Full Loading means all Major Groups (0-5) are selected.
- For 5MHz Full Loading means that all relevant Major Groups (0, 2, 4) are selected.

For First Zone Maximum Size the values are:

- If First Zone Minimum Size is set to No Limitations, the value range for Maximum Size is the same as for Minimum Size.
- Else, the value range is No Limitations or First Zone Minimum Size+2N, up to a maximum of Y as defined below.

The value of Y that sets the upper limit for the Minimum and Maximum Size parameters depends on the Maximum Cell Radius and Total Uplink Duration parameters, using the following formula:

Y=A-3*(Total Uplink Duration)-(Extra TTG),
where A=46 for BW of 5 or 10 MHz, and 32 for BW of 7 MHz.

Table 7-8: Calculating the Upper Limit Value (Y) for Minimum and Maximum Size

Bandwidth (MHz)	Maximum Cell Radius	Total Uplink Duration (slots)	Extra TTG (symbols)
5/10	1, 2, 4, 8	4, 6	0
	1, 2, 4, 8, 15, 23	5, 7	1
	15, 23, 30	4, 6	2
	30	5, 7	3
7	1, 2, 4, 8, 15, 23	4	0
	1, 2, 4, 8, 15, 23, 30	3, 5	1
	30	4	2

7.8.2.1.4 Radio Basic Page-Mobility Tab

The Mobility tab enables defining the deployment mode and the handover negotiation parameters. It also enables defining ID-IP mapping of neighbor BSs.

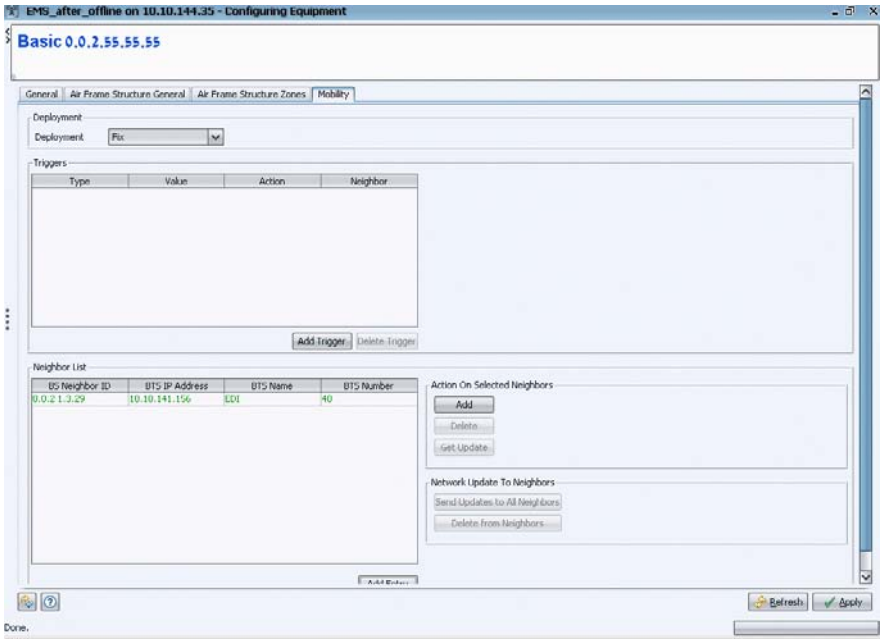


Figure 7-45: Radio Basic Page - Mobility Tab

The Mobility tab includes the following sections:

- "Deployment"
- "Triggers"
- "Neighbor List"

7.8.2.1.4.1 Deployment

The Deployment section includes the Deployment parameter:

Parameter	Description
Deployment	The type of deployment in the area served by the BS: Fix or Mobile. To support proper handover, should be set to Fix only if mobile MSs are not expected. The default is Fix.

7.8.2.1.4.2 Triggers

The Triggers table includes the following parameters for each entry:

Parameter	Description
Type	The type of trigger.
Value	The threshold value for the Trigger.
Action	The action to be triggered when the relevant values goes above/below the threshold. The available options depend on the selected Type.
Neighbor	Applicable only for triggers with Handover Action. The neighbor(s) for whom the rule defined by the previous parameters is applicable: General (for all neighbors) or a specific neighbor (from the Neighbor List).

The Triggers table also includes the following buttons:

Button	Description
Add Trigger	Adds a new entry to the Triggers table.
Delete Trigger	Deletes one or several selected entries from the Triggers table.

The Type, Action and Neighbor of an existing Trigger entry cannot be modified. In existing Triggers entries only the Value can be modified.

The following table provides description, possible Actions and value range for each Trigger Type:

Trigger Type	Possible Actions	Trigger Condition	Possible Values
Own CINR <	Scan Request Handover Request	The CINR at the Serving BS is below the Trigger threshold (in dB)	-64 to 63.5 in steps of 0.5
Neighbor CINR >	Handover Request	The CINR at the Neighbor BS is above the Trigger threshold (in dB)	-64 to 63.5 in steps of 0.5
Neighbor CINR-Own CINR >	Handover Request	The CINR at the Neighbor BS minus the CINR at the Serving BS is above the Trigger threshold (in dB)	-64 to 63.5 in steps of 0.5
Own RSSI <	Scan Request Handover Request	The RSSI at the Serving BS is below the Trigger threshold (in dBm)	-103.75 to -40 in steps of 0.25
Neighbor RSSI >	Handover Request	The RSSI at the Neighbor BS is above the Trigger threshold (in dBm)	-103.75 to -40 in steps of 0.25
Neighbor RSSI-Own RSSI >	Handover Request	The RSSI at the Neighbor BS minus the RSSI at the Serving BS is above the Trigger threshold (in dBm)	-32 to 31.75 in steps of 0.25
Distance	Scan Request Handover Request	The Serving BS distance from the MS (calculated by measuring the round trip delay) is above the Trigger threshold (in meter)	0-3400 in steps of 50 if BS BW is 10 MHz, 0-6800 in steps of 50 if BS BW is 5 MHz, 0-4800 in steps of 50 if BS BW is 7 MHz

Note: Following any change in Bandwidth, the existing Distance triggers must be deleted and redefined.

7.8.2.1.4.3 Neighbor List

The Neighbor List includes the following parameters for each Neighbor BS:

Parameter	Description
BS Neighbor ID	Read-only. The BS ID LSB of the Neighbor BS.
IP Address	The IP address of the neighbor BS.

Parameter	Description
BTS Name	Read-only. The name of the Neighbor BS site.
BTS Number	Read-only. The BTS Name (Site ID) of the Neighbor BS site.

The Neighbor List also includes the following buttons:

Button	Description
Add Entry	Opens the BS Selector window that enables selection of one or several new candidate neighbors. The selected neighbors appears in the neighbor list, however the new neighbors are not actually added until the Add Neighboring Task is executed. For each new entry in the list, you should define the IP Address of the neighbor BS (ID-IP mapping).
Action on Selected Neighbors	
Add	Opens the Add Neighboring Task that allows adding the selected BS(s) to the neighbor list of the current BS.
Delete	Opens the Delete Neighboring Task that allows deleting the selected BS(s) and their details from the neighbor list of the current BS.
Get Update	Opens the Get Update Neighboring Task that allows getting an update from the selected Neighbor BS sites, regarding their current parameters' values.
Network Update To Neighbors	
Send Updates to All Neighbors	Opens the Send Update to All Neighbors Neighboring Task that allows sending updates regarding this BS to all or selected Neighbor BSs.
Delete from Neighbors	Opens the Delete from Neighbors Neighboring Task that allows deleting the current BS and its details from the Neighbor Lists of all or selected Neighbor BSs.

The Neighboring Task enables the BSs that will participate in a one-time task according to the selected operation.

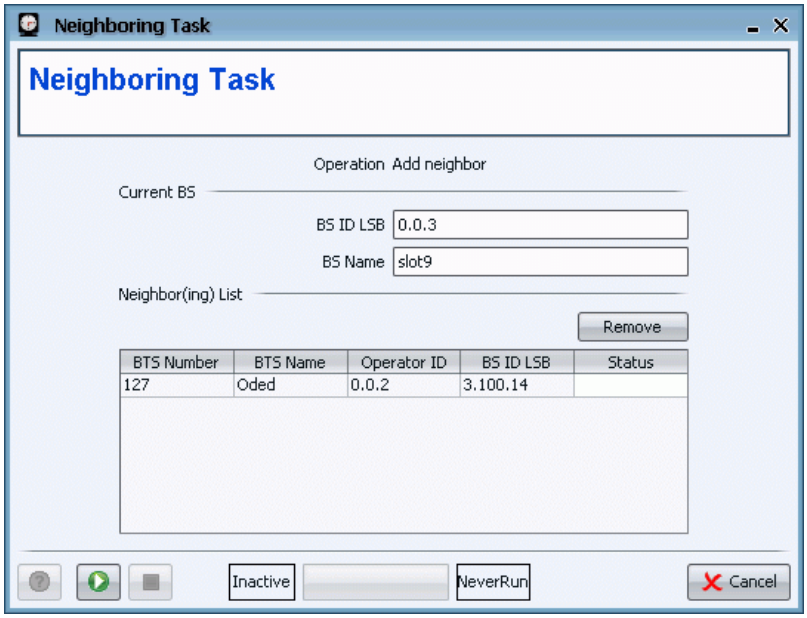


Figure 7-46: Neighboring Task (Operation Add Neighbor)

The Neighboring Task includes the following components:

Parameter	Description
Operation	The operation to be executed, according to the button that initiated the task: ■ Add neighbor. ■ Delete neighbors ■ Get Update ■ Send Update to Neighboring ■ Delete from Neighboring
Current BS	The BS ID LSB and BS Name of the current BS.
Neighboring List	The details of neighboring BSs that will participate in the task. The initial list includes the BSs that where selected when the task was initiated. You may use the Remove button to remove selected BS(s) from the list. The details for each neighboring BS in the list includes its ID (BS ID LSB), Site Name and Site ID (Site Number).

Refer also to "Mass Neighboring Task" on page 313.

7.8.2.2 Radio Advanced Page

The Radio Advanced page includes the following tabs:

- "Radio Advanced Page-Feedback Tab"
- "Radio Advanced Page-Power Control Tab"
- "Radio Advanced Page-Management Tab"
- "Radio Advanced Page-QoS Tab"

7.8.2.2.1 Radio Advanced Page-Feedback Tab

The Feedback tab enables defining various ranging parameters.

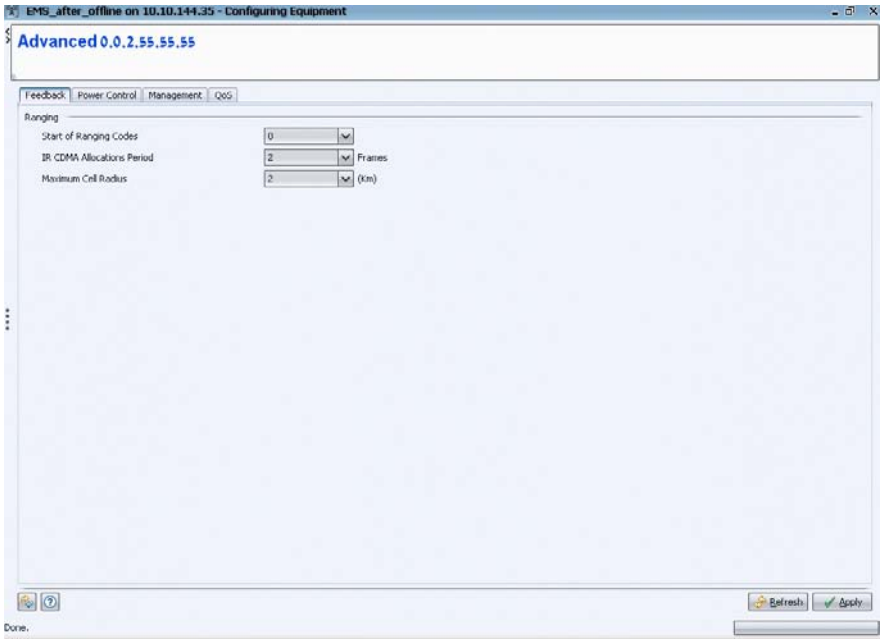


Figure 7-47: Radio Advanced Page - Feedback Tab

The Feedback tab includes the following ranging parameters:

Parameter	Description
Start of Ranging Codes	The starting number of the group of codes used for the uplink. The available options are 0, 64, 128, 192. The default is 0.

Parameter	Description
IR CDMA Allocation Period	The period of IR CDMA allocations, in frames. The available options are 1, 2, 4, 6, 8, 10. The default is 2. In the current release actual value is always 2 (the configured value is ignored).
Maximum Cell Radius	The maximum cell radius (in km). The available values are 1, 2, 4, 8, 15, 23. 30. The default is 2.

7.8.2.2.2 Radio Advanced Page-Power Control Tab

The Power Control tab enables defining the target noise and interference levels.

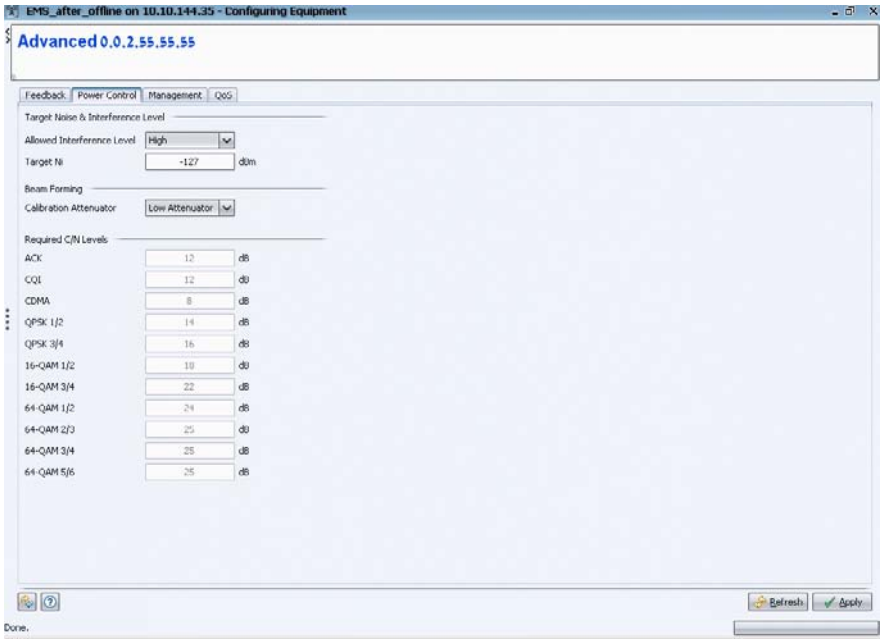


Figure 7-48: Radio Advanced Page - Power Control Tab

The Power Control tab includes the following parameters:

Parameter	Description
Target Noise & Interference Level	
Target NI	The target noise and interference level for the PUSC zone, in dBm. The range is from -130 to -110 in steps of 1 (dBm). The default is -127.
Allowed Interference Level	Correction of maximum allowed UL MCS based on measured DL ~~S~~CINR. The options are Very High, High, Medium, Low. The default is High.

Parameter	Description
Beam Forming	
Calibration Attenuator	Not applicable for 2-channels AU (Macro Outdoor BTS) and Micro Outdoor BTS. Applicable only for Beam Forming DL Diversity Mode. The calibration attenuation used to help mitigate potential out of band interference to beam forming calibration caused by other base stations. The options are No Attenuation, Low Attenuation, High Attenuation. The default is Low Attenuation.
Required C/N Levels (Read-Only)	
ACK	The C/N in dB required for sending ACK, reported to the MS for power control purposes. The range is from -20 to 50 (dB). The default is 7.
CQI	The C/N in dB required for sending CQI, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for ACK - 8 to Required C/N Level for ACK + 7 (see ACK parameter above). The default is 12.
CDMA	The C/N in dB required for transmitting CDMA, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for CQI - 8 to Required C/N Level for CQI + 7 (see CQI parameter above). The default is 9.
QPSK 1/2	The C/N in dB required for sending QPSK 1/2, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for CDMA - 16 to Required C/N Level for CDMA + 14 (see CDMA parameter above). The default is 13.
QPSK 3/4	The C/N in dB required for sending QPSK 3/4, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for QPSK 1/2 - 16 to Required C/N Level for QPSK 1/2 + 14 (see QPSK 1/2 parameter above). The default is 16.
16-QAM 1/2	The C/N in dB required for transmitting 16-QAM 1/2, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for QPSK 3/4 - 8 to Required C/N Level for QPSK 3/4 + 7 (see QPSK 3/4 parameter above). The default is 19.

Parameter	Description
16-QAM 3/4	The C/N in dB required for sending 16-QAM 3/4, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for 16-QAM 1/2 - 16 to Required C/N Level for 16-QAM 1/2 + 14 (see 16-QAM 1/2 parameter above). The default is 22.
64-QAM 1/2	The C/N in dB required for sending 64-QAM 1/2, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for 16-QAM 3/4 - 16 to Required C/N Level for 16-QAM 3/4 + 14 (see 16-QAM 3/4 parameter above). The default is 23.
64-QAM 2/3	The C/N in dB required for sending 64-QAM 2/3, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for 64-QAM 1/2 - 8 to Required C/N Level for 64-QAM 1/2 + 7 (see 64-QAM 1/2 parameter above). The default is 25.
64-QAM 3/4	The C/N in dB required for sending 64-QAM 2/3, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for 64-QAM 2/3 - 8 to Required C/N Level for 64-QAM 2/3 + 7 (see 64-QAM 2/3 parameter above). The default is 26.
64-QAM 5/6	The C/N in dB required for transmitting 64-QAM 5/6, reported to the MS for power control purposes. The range is from -20 to 50 (dB). Must be in the range from Required C/N Level for 64-QAM 3/4 - 8 to Required C/N Level for 64-QAM 3/4 + 7 (see 64-QAM 3/4 parameter above). The default is 28.

Note: The Required C/N Levels are configurable only by using the Multiple Configuration task.

7.8.2.2.3 Radio Advanced Page-Management Tab

The Management tab enables defining alarm threshold parameters.

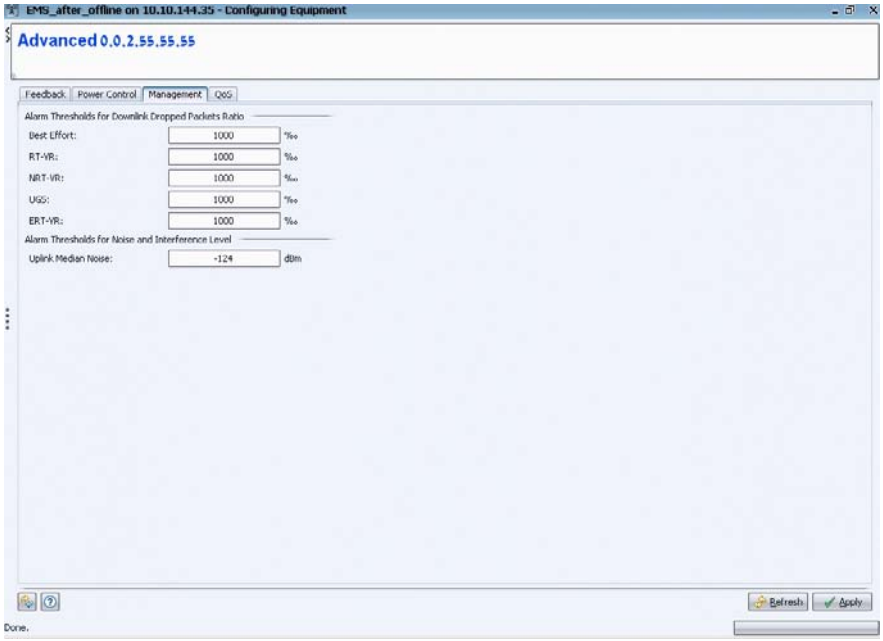


Figure 7-49: Radio Advanced Page - Management Tab

The Management tab includes the following parameters:

Parameter	Description
Alarm Thresholds for Downlink Dropped Packets Ratio	
Best Effort	The threshold for excessive DL dropped packets ratio (in promils), of DL packets in all Best Effort services, which when exceeded triggers a Best Effort service alarm. The range is from 1 to 1000 (promil). The default is 1000.
RT-VR	The threshold for excessive DL dropped packets ratio (in promils), of DL packets in all RT-VR services, which when exceeded triggers an RT-VR service alarm. The range is from 1 to 1000 (promil). The default is 1000.
NRT-VR	The threshold for excessive DL dropped packets ratio (in promils), of DL packets in all NRT-VR services, which when exceeded triggers an NRT-VR service alarm. The range is from 1 to 1000 (promil). The default is 1000.
UGS	The threshold for excessive DL dropped packets ratio (in promils), of DL packets in all UGS services, which when exceeded triggers a UGS service alarm. The range is from 1 to 1000 (promil). The default is 1000.

Parameter	Description
ERT-VR	The threshold for excessive DL dropped packets ratio (in promils), of DL packets in all ERT-VR services, which when exceeded triggers an ERT-VR service alarm. The range is from 1 to 1000 (promil). The default is 1000.
Alarm Thresholds for noise and interference level	
Uplink Median Noise	The uplink median noise level represents the median value of the noise floor histogram. If the uplink median noise level exceeds this value, an excessive uplink median noise alarm will be generated. The value is in dBm/tone. The default value of -124 is set to 3 dB above the default value of the Target NI parameter, see "Radio Advanced Page-Power Control Tab" on page 265). The range is from -135 to -100 (dBm).

7.8.2.2.4 Radio Advanced Page-QoS Tab

The QoS tab enables defining QoS management parameters for scheduling uncommitted traffic (above the maximum reserved rate).

Scheduling uncommitted traffic can be done using one of the following options:

- Equal Time (ET) scheduling mode, in which air resources are being scheduled in a fair manner proportional to the users' excess traffic (maximum sustained rate - maximum reserved rate) SLAs.

- Equal Rate (ER) scheduling mode, in which air resources are allocated to users aiming at ensuring data rate fairness between users proportional to their excess traffic SLAs.

Assuming a sector with diversity (different channels conditions) of active users, ET scheme enables higher aggregate sector throughput at the expense of data-rate fairness among users, while ER scheduling scheme ensures maximum data-rate fairness among users at the expense of lower aggregate sector throughput.

Using ER scheduling scheme exposes the system to excessive allocation of air resources to highly active users having relatively poorer channel conditions. To ensure data-rate fairness, more resources will to be allocated to these users compared to users with relatively good channel conditions. The effect of a small number of such users within the sector will be reflected by reduced aggregate sector throughput as well as degradation of achievable rates for all users.

To protect against "abusing" users, an instantaneous rate threshold can be defined within the scheduling scheme in which the amount of air resources for

users with continuous instantaneous rate below the threshold is being limited. The more the abusing users' instantaneous rate is below the threshold, the more resource allocations limitation is applied.

Three levels of dynamic protection are available:

- No protection.
- Low protection level - Protection against users with very poor channel conditions. Should be used where the abusing users instantaneous rates are far below the average instantaneous rate within the sector.
- Medium protection - Protection against users with relatively poor or very poor channel conditions. Should be used where the abusing users instantaneous rates are below or far below the average instantaneous rate within sector.

A dynamic protection mechanism is implemented, in which the mechanism of limiting resource allocations is automatically and dynamically activated when needed.

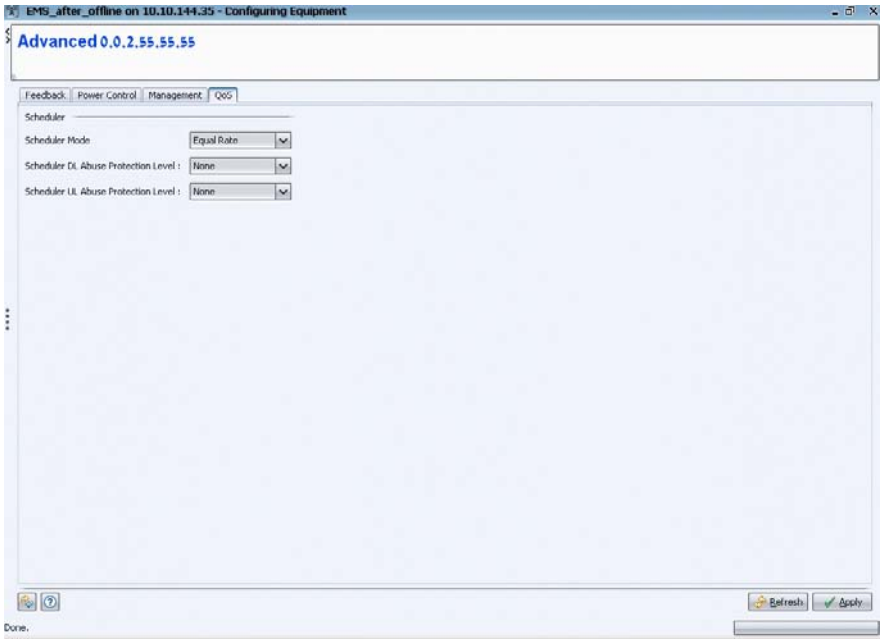


Figure 7-50: Radio Advanced Page - QoS Tab

The QoS tab includes the following parameters:

Parameter	Description
Scheduler Mode	The basis for allocating excess bandwidth among relevant users: ■ Equal Rate: Throughput Fairness ■ Equal Time: Resource Fairness The selected mode is applicable for both uplink and downlink schedulers. The default is Equal Rate.
Scheduler DL Abuse Protection Level	Applicable only if the selected Scheduler Mode is Equal Rate. ■ None: No Protection ■ Low: Limit the DL resources allocated to MSs with very low DL transmission Rate. ■ Medium: Limit the DL resources allocated to MSs with low and very low DL transmission Rate. The default is None.
Scheduler UL Abuse Protection Level	Applicable only if the selected Scheduler Mode is Equal Rate. ■ None: No Protection ■ Low: Limit the UL resources allocated to MSs with very low UL transmission Rate. ■ Medium: Limit the UL resources allocated to MSs with low and very low UL transmission Rate. The default is None.

7.8.3 R6/R8 Bearer Interface Page

The R6/R8 Bearer Interface page includes the following tabs:

- "R6/R8 Bearer Interface Page-Bearer Tab"
- "R6/R8 Bearer Interface Page-Authentication Tab"
- "R6/R8 Bearer Interface Page-QoS Marking Rules Tab"

7.8.3.1 R6/R8 Bearer Interface Page-Bearer Tab

The Bearer tab enables defining the Bearer Interface of the BS parameters.

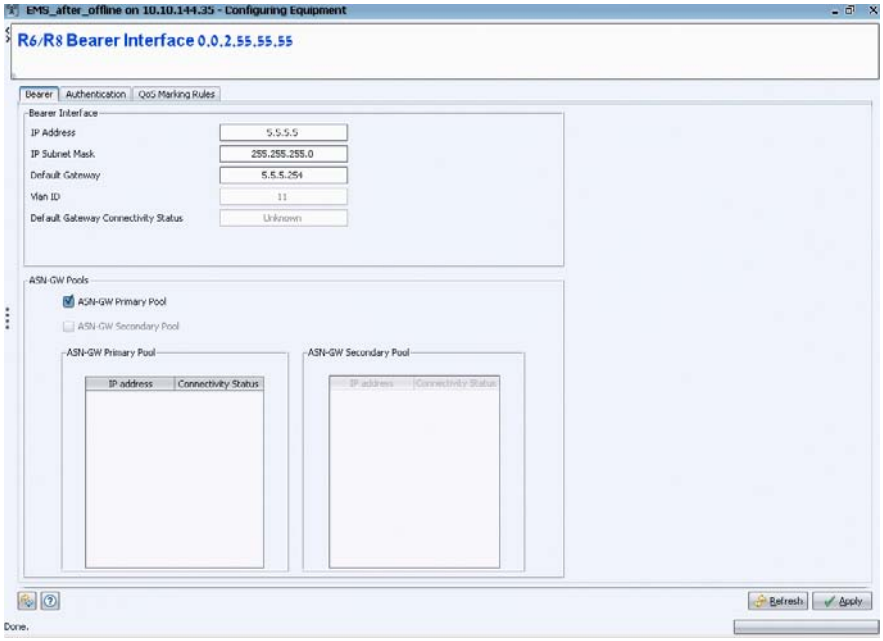


Figure 7-51: R6/R8 Bearer Interface Page - Bearer Tab

The Bearer tab includes the following sections:

- "Bearer Interface"
- "ASN-GW Load Balancing"

7.8.3.1.1 Bearer Interface

Parameter	Description
IP Address	The IP address of the bearer interface of the BS. Must be unique in the network. All BS bearer interfaces of the unit should be in the same subnet, together with the NPU's bearer interface (in Distributed ASN-GW Topology).
IP Subnet Mask	The IP subnet mask of the bearer interface of the BS.
Default Gateway	The IP address of the default gateway of the bearer interface of the BS. Must be in the same subnet with the BS bearer IP Address.

Parameter	Description
VLAN ID	The VLAN ID of the bearer interface of the BS. In a Macro Indoor/Outdoor BTS it is not configurable and is equal to the NPU Bearer VLAN ID (see "L1/L2 Connectivity Page" on page 147). Configurable only for Micro Outdoor BTS. The range is 11-100, 110-4094. The default is 11.
Default Gateway Connectivity Status	Read-only. The status of connectivity with the default gateway: Unknown, Up, down. The keep-alive mechanism starts only after first registration at the ASN-GW. Until then this mechanism is disable and connectivity status is Unknown.

7.8.3.1.2 ASN-GW Load Balancing

At the unit (NPU) level, up to two pools (with different priorities), each with up to 10 ASN-GWs, can be defined (see "ASN-GW Pools Page" on page 177). Each BS defined in the unit will "inherit" these pools. It should be noted the ASN-GW defined in the BS as the Default Authenticator will be automatically added to the Primary Pool that is the higher priority pool (if not included already).

At the BS level, you can enable/disable the use of each of the two pools. The defaults are Enable for ASN-GW Primary Pool and Disable for ASN-GW Secondary Pool. The Secondary Pool can be enabled only if the Primary Pool is enabled and the Primary Pool includes at least one entry. Note that if both pools are disabled, or if the enabled pool(s) are empty, the ASN-GW load balancing feature is disabled and only the Default Authenticator will be used.

Each Pool table displays the following read-only parameters for each defined ASN-GW:

Parameter	Description
IP Address	The IP address of the ASN GW.
Connectivity Status	Read-only. The status of connectivity with the ASN-GW: Unknown, Up, down. The keep-alive mechanism starts only after first registration at the ASN-GW. Until then this mechanism is disable and connectivity status is Unknown.

7.8.3.2 R6/R8 Bearer Interface Page-Authentication Tab

The Authentication tab enables defining the authentications thresholds for connectivity.

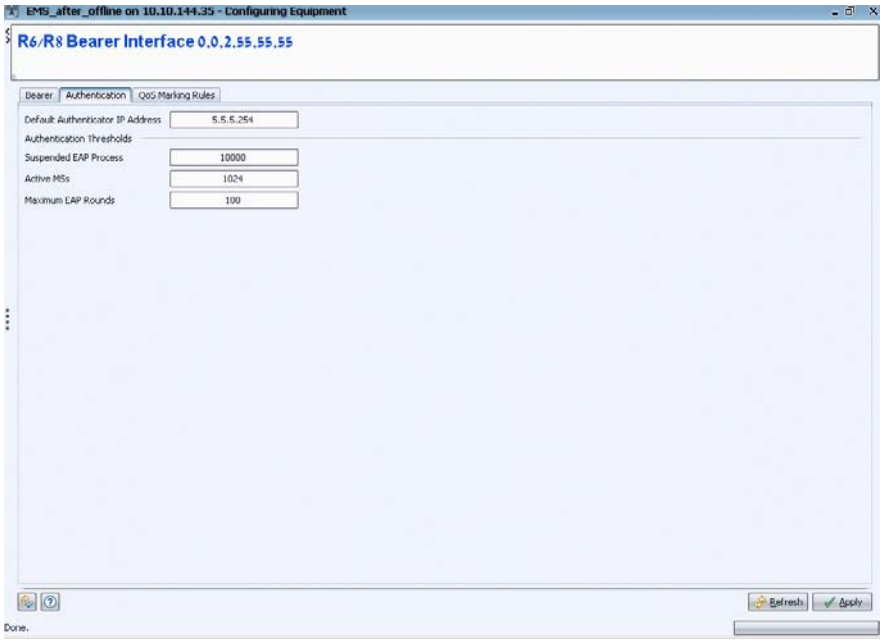


Figure 7-52: R6/R8 Bearer Interface Page - Authentication Tab

The Authentication tab includes the following parameters:

Parameter	Description
Default Authenticator IP Address	The IP address of the default authenticator ASN GW. In Distributed ASN-GW Topology this is typically the IP address of the NPU's Bearer interface.
Authentication Thresholds	
Suspended EAP Process	Suspended EAP authentication process threshold. It is used to set an alarm. The range is 0-10000. The default is 10000. Note: The relevant alarm is not supported in current release.
Active MSs	The threshold for the number of MSs in active operation state (not Idle) served by the BS. Exceeding this threshold sets the alarm "Excessive MS number". The range is 0-1024. When set to 0, the alarm is disabled. The default is 1024.

Parameter	Description
Maximum EAP Rounds	The threshold for the number of EAP rounds in one direction in the same EAP session. When this threshold is exceeded, alarm is set. This threshold may be used to protect the system from hazard EAP sessions with extreme number of messaging round trips. The range is 0-100. When set to 0, the alarm is disabled. The default is 100. Note: The relevant alarm is not supported in current release.

7.8.3.3 R6/R8 Bearer Interface Page-QoS Marking Rules Tab

The QoS Marking Rules tab enables defining Bearer Plan QoS rules.

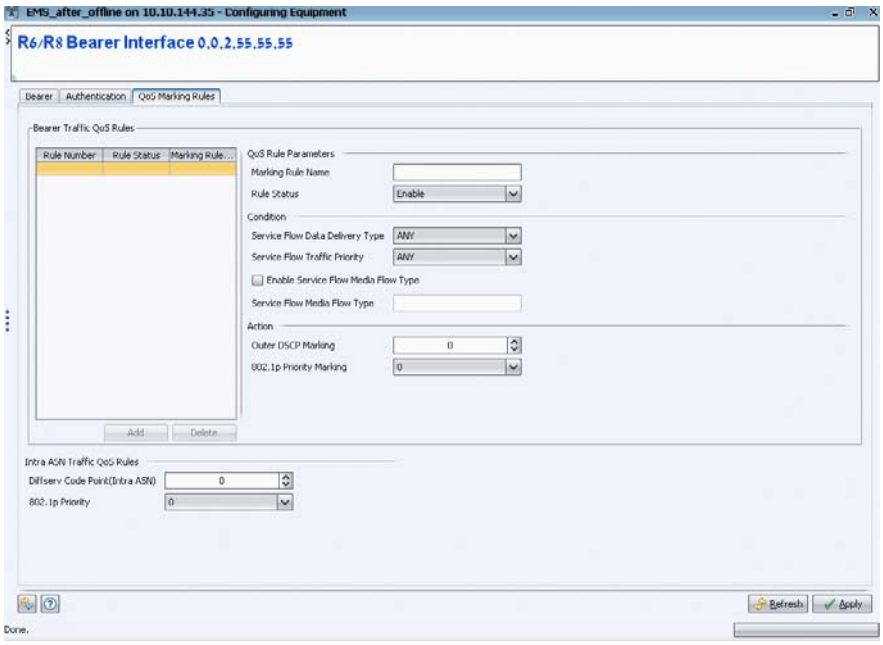


Figure 7-53: R6/R8 Bearer Interface Page-QoS Marking Rules Tab

The QoS Marking Rules tab includes the following sections:

- "Bearer Traffic QoS Rules"
- "Intra ASN Traffic QoS Rules"

7.8.3.3.1 Bearer Traffic QoS Rules

The Bearer Traffic QoS Rules section includes the Bearer Traffic QoS Rules table and the QoS Rule Parameters Editor.

The Bearer Traffic QoS Rules table displays the following read-only parameters for each existing QoS rule:

Parameter	Description
Rule Number	The index number of the rule. An auto-sequential number generated automatically when creating a new rule.
Rule Status	The status of the rule (Enable or Disable).
Marking Rule	The name of the QoS Marking Rule

Select an entry to open the Editor for the selected rule.

The following buttons are available below the table.:

Button	Description
Add	Adds a new entry to the table and opens the Editor, allowing to configure parameters for the new rule. Up to a maximum of 16383 rules can be defined.
Delete	Deletes the selected entry (or several selected entries) from the table.

The QoS Rule Parameters Editor includes the following parameters:

Parameter	Description
QoS Rule Parameters	
Marking Rule Name	The name of the QoS Marking Rule. An optional s string of up to 32 characters.
Rule Status	The status of the rule (Enable or Disable). The default is Enable.
Condition	
Service Flow Data Delivery Type	The Service Flow Type for data delivery services: uGS, rTVR, nRTVR, BE, eRTVR, or ANY. The default is ANY.
Service Flow Traffic Priority	The priority of Service Flow traffic. 0-7 or ANY. The default is ANY.
Enable Service Flow Media Flow Type	Indicates whether the condition for Service Flow Media Flow Type is enabled or disabled. If enabled, the Service Flow Media Flow Type will be considered. when looking for a match. The default is Disable.

Parameter	Description
Service Flow Media Flow Type	The Service Flow Media Flow Type, as defined in ASN-GW or AAA server.
Action	
Outer DSCP Marking	The DSCP value to be used for marking the outer IP header (IP/GRE). The range is 0-63. The default is 0.
802.1p Priority Marking	The 802.1p priority to be used for marking traffic. The range is 0-7. The default is 0.

7.8.3.3.2 Intra ASN Traffic QoS Rules

The Intra ASN Traffic QoS Rules section includes the following parameters:

Parameter	Description
Diffserv Code Point	DSCP priority value to be used for marking of intra-ASN (R8/R6) traffic. The range is 0-63. The default is 0.
802.1p Priority	802.1p priority value to be used for marking of intra-ASN (R8/R6) traffic. The range is 0-7. The default is 0.

7.9 Site Sector

Not applicable for Mini-Centralized ASN-GW.

From the navigation tree for a Macro Indoor/Outdoor BTS you can create new ODU entities or delete an existing ODU entity (see "Creating/Deleting a Site Sector" below).

The Site Sector node includes a "Site Sector <#> Page" for each configured site sector. Up to 6 site sectors, numbered 1 to 6, can be defined for a Macro Indoor/Outdoor BTS. In a Micro Outdoor BTS there is a single, automatically configured Site Sector page.

7.9.1 Creating/Deleting a Site Sector

To add a site sector, right-click the Site Sector node in the navigation tree and select **Create**.

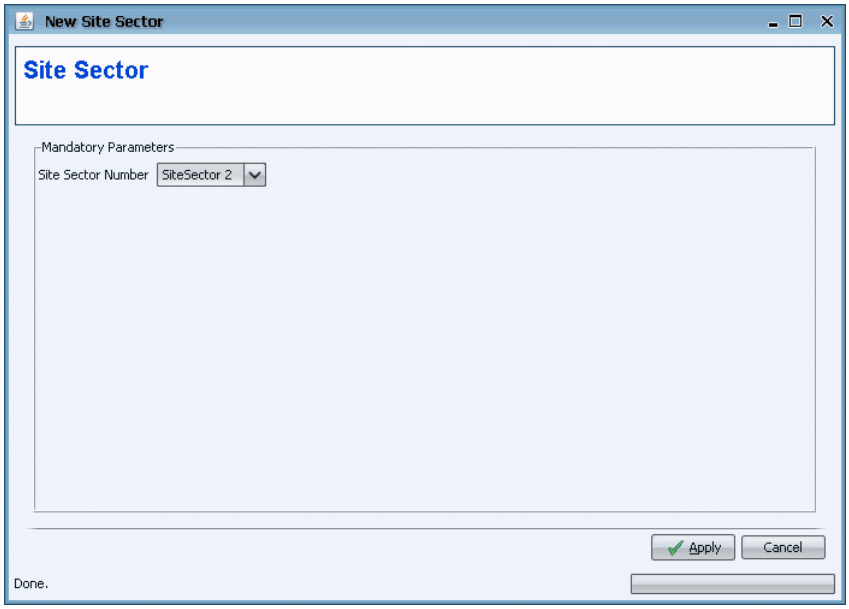


Figure 7-54: New Site Sector Window

In the New Site Sector window, select the mandatory Site Sector Number (the available options include only unassigned numbers) and click **OK**. You should

configure additional properties in the Site Sector # page that is added to the navigation tree.

To delete a site sector, right-click the required Site Sector # sub-node in the navigation tree and select **Delete**.

7.9.2 Site Sector <#> Page

The Site Sector <#> page enables defining site sector general properties and associations.

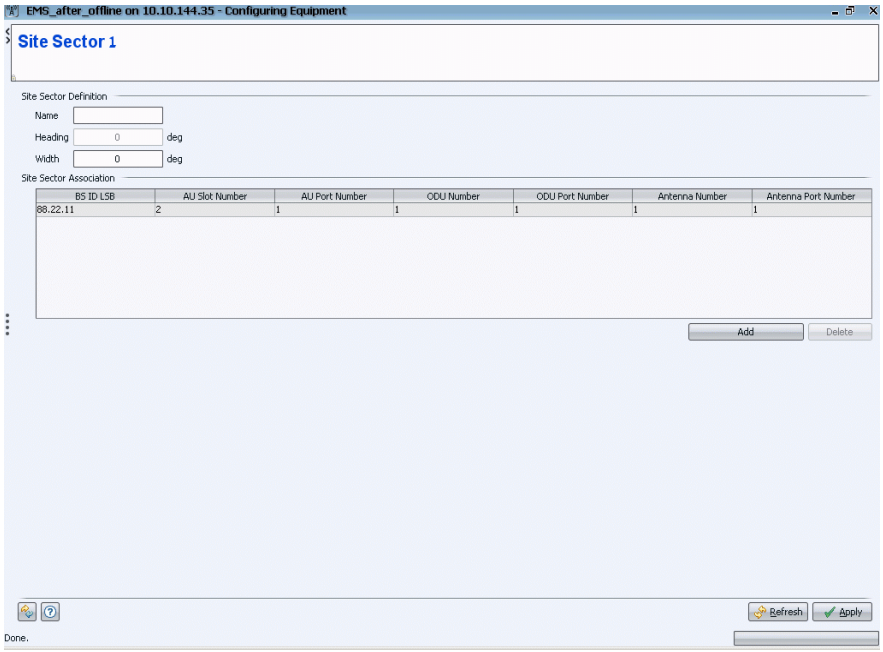


Figure 7-55: Site Sector <#> Page, Macro Indoor/Outdoor BTS

The Site Sector # page includes the following sections:

- "Site Sector Definition"
- "Site Sector Association in a Macro Indoor/Outdoor BTS"
- "Site Sector Association in a Micro Outdoor BTS"

7.9.2.1 Site Sector Definition

The Site Sector Definition section includes the following parameters:

Parameter	Description
Name	The sector name. An optional descriptive string of up to 32 printable characters.
Heading	The sector heading (the center angle of the sector), in degrees. The range is from 0 to 359. The heading of an associated Sector cannot be changed. The default is 0.
Width	The planned sector coverage, in degrees. The range is from 0 to 359. The default is 0.

7.9.2.2 Site Sector Association in a Macro Indoor/Outdoor BTS

The Site Sector Association table includes the following parameters for each site sector association (configurable only when adding a new association):

Parameter	Description
BS ID LSB	The unique ID of the BS.
AU Slot Number	The AU slot number. When adding a new sector association, double-click on the entry to open a drop-down menu that includes all available AUs.
AU Port Number	The AU port number. When adding a new sector association, available only after selecting an AU. Double-click on the entry to open a drop-down menu that includes all available ports according to the type of the selected AU (1-4 for a 4-channels AU, 1-2 for a 2-channels AU).
ODU Number	The ODU number. When adding a new sector association, double-click on the entry to open a drop-down menu that includes all available ODUs.
ODU Port Number	The ODU port number. When adding a new sector association, available only after selecting an ODU. Double-click on the entry to open a drop-down menu that includes all available ports according to the type of the selected ODU (1, 2, or 4).
Antenna Number	The antenna number. When adding a new sector association, double-click on the entry to open a drop-down menu that includes all available Antennas.
Antenna Port Number	The antenna port number. When adding a new sector association, available only after selecting an Antenna. Double-click on the entry to open a drop-down menu that includes all available ports according to the type of the selected Antenna(1, 2, or 4).

The Site Sector Association table also includes the following buttons:

Button	Description
Add	Adds a new entry to the table.
Delete	Deletes the selected entry (or several selected entries) from the table.

An existing association cannot be modified (to modify an association-delete it and add the modified association.

To add an association, click on the Add button. A new line is added to the table. Double-click on each parameter's entry to open a drop-down selection menu with the available options according to the status of the relevant components in the database.

Creation of a new Sector Association entry will succeed only if all the following conditions are met:

- The specified BS object exists and is properly configured:
  - All mandatory parameters have been configured properly.
  - The configured frequency is within the valid range defined by the required ODU type in the specified ODU object and the bandwidth parameter.
  - The Operator ID is the same as Operator ID configured for previously associated BSs.
- An ODU Port (combination of ODU No. and ODU Port No.) cannot appear in more than one entry.
- All ODUs associated with the same AU must use the same frequency band.
- An AU Port (combination of AU Slot No. and AU Port No.) cannot appear in more than one entry.
- An Antenna Port (combination of Antenna No. and Antenna Port No.) cannot appear in more than one entry.
- A specific Antenna can only be associated with a single Sector.
- In the current release, a specific BS can only be associated with a single AU, and vice versa (If in a certain entry BS 66053 is associated with AU 1, BS 66053 cannot be associated with another AU, and AU 1 cannot be associated with another BS).

- Two ODUs associated with the same AU (for Beam Forming support) must be in the same frequency band. This is applicable for 2x2 and 4x2 ODUs that support Beam Forming.

7.9.2.3 Site Sector Association in a Micro Outdoor BTS

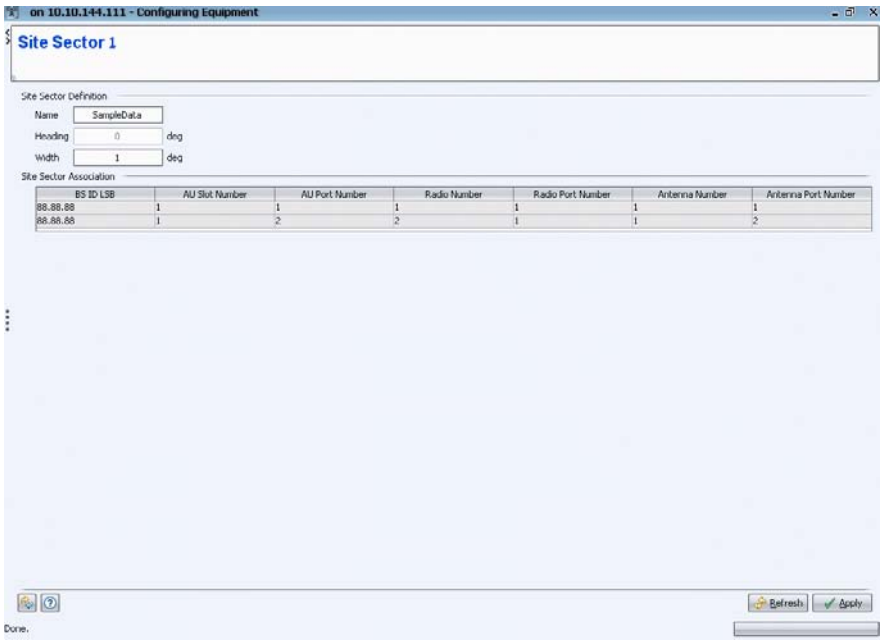


Figure 7-56: Site Sector Page, Micro Outdoor BTS

The Site Sector Association table in a Micro Outdoor BTS is created automatically based on the relevant defined objects. The table includes the following read-only parameters for each of the two site sector associations:

Parameter	Description
BS ID LSB	The unique ID of the BS. The same for both entries.
AU Slot Number	1 (for both entries)
AU Port Number	1 and 2.
Radio Number	1 and 2
Radio Port Number	1 (for both entries)
Antenna Number	The antenna number. 1 and 2 if two 1-port antennas are defined, 1 (for both entries) if a 2-ports antenna is defined.
Antenna Port Number	The antenna port number. 1 (for both entries) for 1-port antennas, 1 and 2 for a 2-ports antenna.

Chapter 8

The Performance Monitoring Viewer

In This Chapter:

- "The Performance Monitoring Viewer" on page 285
- "The Counters Group Selection Section" on page 286
- "The Counters Selection Section" on page 287
- "The Graph and Graph Controls Section" on page 288
- "General Controls" on page 289

8.1 The Performance Monitoring Viewer

The Performance Monitoring Viewer enables on-line monitoring of graphs for selected counters.

The graph for an accumulating counter displays the average rate per second during the interval from last polling time, defined as:
(Current Value-Previous Value)/Polling Interval.

For gauge counters (marked with a * sign before the counter's name), the absolute value reported at the polling time is displayed.

For details on supported counters groups and the counters in each group, refer to the Performance Monitoring document.

To open the Performance Monitoring Viewer:

In the Equipment Manager, select one device whose state is Enabled, right click on the entry and select the Performance option in the pop-up window. The Performance Monitoring Viewer for the selected device will open.

The Performance viewer include three sections: the counter group selection section, the counters selection section and the graph section. For convenient viewing of the required information, you can change the relative sizes of the sections, by dragging the line separating them. In addition, there are several general control buttons at the bottom side of the window.

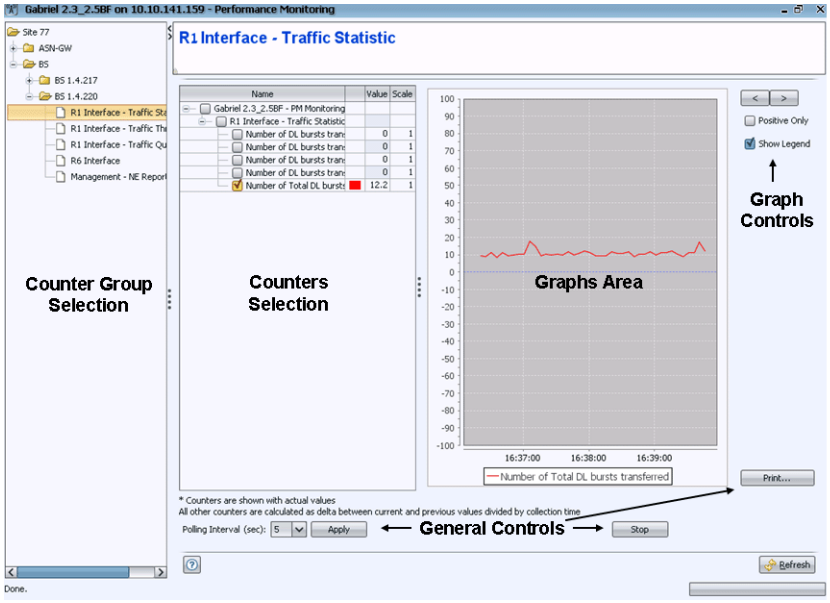


Figure 8-1: The Performance Monitoring Viewer

- "The Counters Group Selection Section" on page 286
- "The Counters Selection Section" on page 287
- "The Graph and Graph Controls Section" on page 288
- "General Controls" on page 289

8.2 The Counters Group Selection Section

The counters group selection section enables you to select a specific counters group.

The counters group selection section, on the left side of the window, displays all the counters groups applicable to the relevant device.

Use the Expand/Collapse (+/-) check-boxes to view/hide all counters groups available for each of the managed objects.

8.3 The Counters Selection Section

The counters selection section enables you to select specific counters for real-time monitoring, to define the color of the graph for each selected counter and to define the graph's values scale for each selected counter.

The counters selection section displays all the counters applicable to the counters group selected in the counters groups selection section.

Use the Expand/Collapse (+/-) check-boxes to view/hide all counters available in the group.

To the right of each counter, the following details are available:

- The color of the graph for this counter (available only for a selected counter)
- The current graph's value of the counter
- The scale value for the graph (see details below)

To view the graph of a counter:

Select the check box to the left of a counter to add its graph to the graph section and view its details. The color to be used in the graph for the selected counters is displayed to the right of the counter.

To change the color of a counter's graph:

Click on the color display (on the right side of the selected counter). The **Pick a Color** window opens, allowing you to change the color's properties.

Deselect the check box to terminate the on-line display of the counter. Select again to continue the display.

NOTE

You can also select/deselect all the counters in a group using the check-box next to the group's or device's name.

To optimize the value (vertical) axis of a counter:

The values scale (vertical axis) is fixed, between -100 to +100 (or between 0 to 100 for a Positive Only graph). Some counters may have values that either exceed this range or are too small. The value scale of each counter is displayed to the right of the counter's name (the default is 1.0). To change the value scale of a counter, double-click on the relevant Scale entry and choose the desired scale from the scale drop-down list that will be displayed. You can use the current graph's value (displayed in the Value column next to the Counter's name) to identify the required value scale. The values displayed for this counter on the graph are the actual counter values multiplied by the scale factor.

8.4 The Graph and Graph Controls Section

The graph and graph control section contains the graphs area, used for displaying the selected counters' values over time, and several graph controls on the right side of the window.

By default, the starting time of the graphs is the time at which the first counter was selected. The resolution of the time axis will change dynamically to allow display of graphs from starting time to current time.

If the **Show Legend** option is selected (the default), the color and name of each selected counter is displayed below the graph area. Deselect to hide the legends.

Select the **Positive Only** check-box to set the boundaries of the values (vertical) axis between 0 and +100. Deselect (the default) to set the boundaries between -100 to +100.

You can use the **<** and **>** buttons to shift the time axis to the left/right.

Left-click and move the mouse to the right while holding the left button down, to mark a selected time interval. After releasing the mouse's left button, the selected interval will be displayed using the entire width of the graph section (zoom-in). You can repeat the process and or use the < and > to zoom-in on a selected time interval.

To return to the default display (after zoom-in and/or shifting the time axis), left-click and move the mouse to the left while holding the left button down.

Right click to open the copy/save options menu enabling you to save the current graph (as a PNG Image File) or copy it to the Clipboard.

8.5 General Controls

The following graph controls are available:

8.5.1 Polling Interval

To change the polling interval:

The available options for the Polling Interval are 5, 10, 20 and 60 seconds. The default is 5 seconds. Select the required polling interval and click on the **Apply** button next to it.

8.5.2 Stop

Available only when at least one counter is selected. Select to stop polling and deselect all counters.

8.5.3 Print

To print or preview a graph:

Click on **Print...**. A pop-up menu opens with three options:

- **Print...:** To open the Print dialog box for selecting a printer, setting up the printing properties and printing the graph section.
- **Print Preview...:** Displays a preview of the graph section before printing.
- **Page Setup...:** To open the Page Setup dialog box.

Chapter 9

Tasks

In This Chapter:

- "Performance Collection Task" on page 292 - not applicable to the Local CRAFT Utility
- "Backup Configuration Task" on page 297
- "Restore Configuration Task" on page 300
- "Software Upgrade Task" on page 303
- "4Motion File Data Aging Task" on page 309
- "CLI Task" on page 310
- "Mass Neighboring Task" on page 313
- "Multiple Configuration (Template Based) Task" on page 316
- "4Motion Mutual Neighboring Task" on page 319

9.1 Performance Collection Task

LOCAL CRAFT NOTE

The Performance Collection Task is not applicable to the Local CRAFT Utility.

The performance data collection and storage feature in the devices (see also "Performance Tab" on page 171) enables collection and storage of selectable groups of counters at fixed intervals of 15 minutes. The device stores the performance data files collected during the last 24 hours (up to 96 xml files).

The Performance Collection task enables the collection of stored performance data files from specific equipment. Only files that do not exist in the database will be retrieved.

To open the Performance Collection Task Editor:

In the Task Manager window, do one of the following:

- To open a new task, use the Task Wizard.
- To open an existing task select a Performance Collection task from the list of existing tasks, right-click and select the **Edit** option, or double-click on the selected task's entry. If the task is Active, the Runtime result screen is displayed, displaying the status of the running task.
- If the task is Inactive, the Performance Collection Task Editor for the existing task is displayed.

The Performance Collection Task Editor includes three tabs:

- "General Tab" - Section 9.1.1
- "Entities Tab" - Section 9.1.2
- "Actions Tab" - Section 9.1.3

9.1.1 General Tab

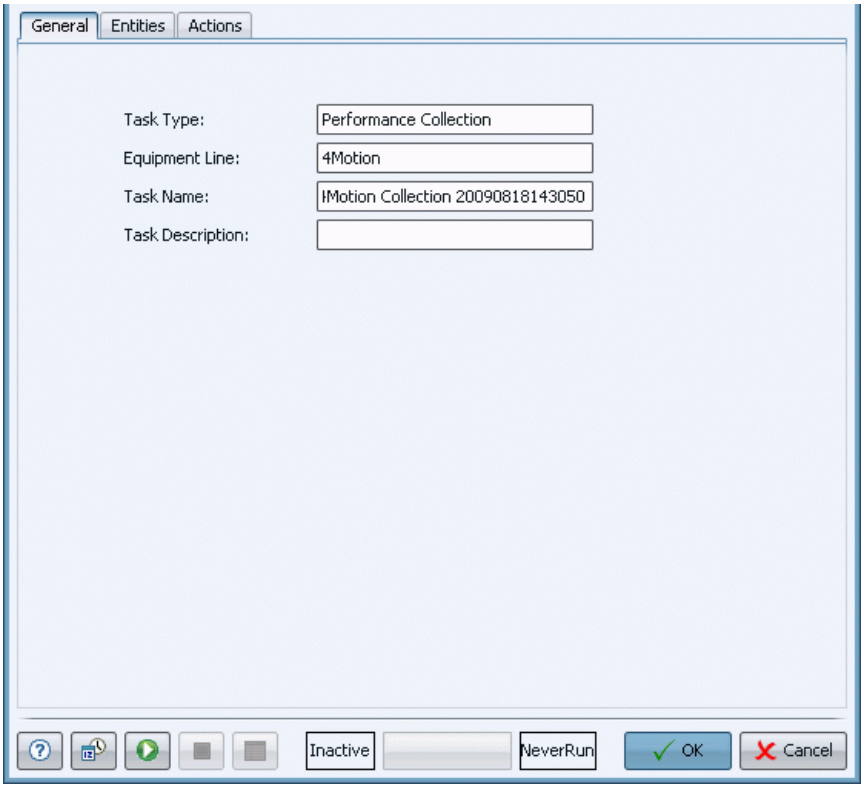


Figure 9-1: Performance Collection Task Editor - General Tab

The General tab of the Performance Collection task includes the following parameters:

Parameter	Description
Task Type	The type of data to be collected: *Performance Collection*. This field is read-only.
Equipment Line	The type of equipment from which to collect data. Read only in the current version
Task Name	The name of the task. A string of 1 to 128 characters. The default name includes the task's type and the date and time at which the task was created. Note that when using the Task Wizard the default task name automatically replaces the name selected in the first (Create New Task) step.
Description	An optional brief description of the task.

9.1.2 Entities Tab

The Entities tab enables the selection of existing entities for performance collection.

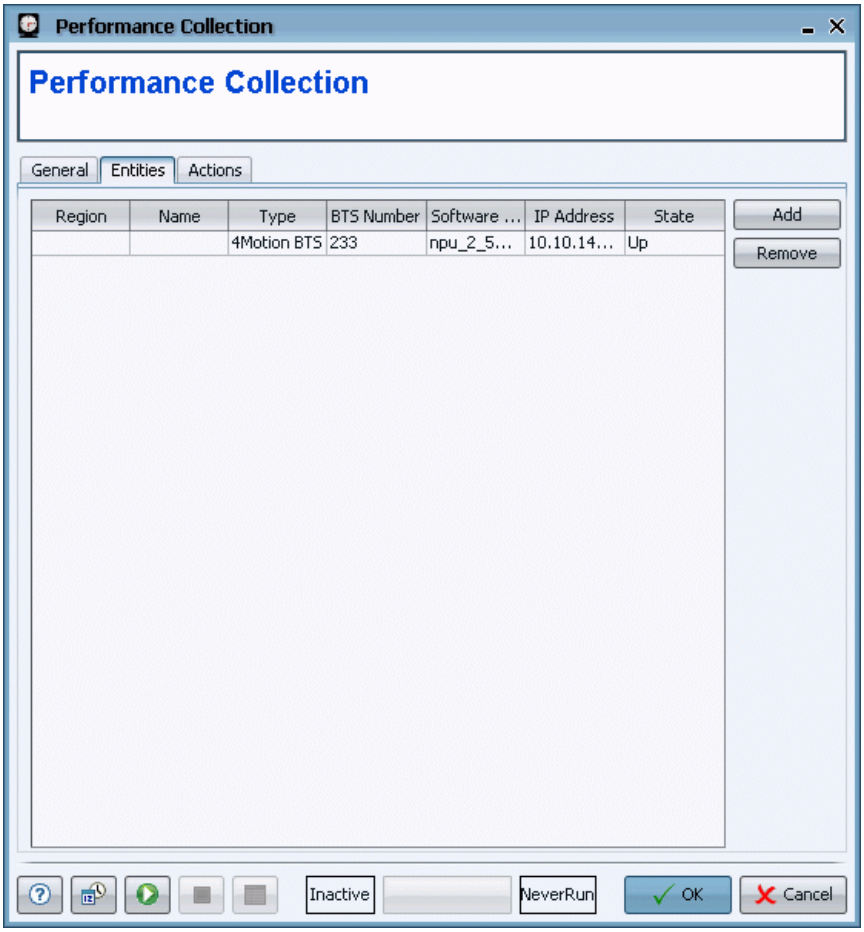


Figure 9-2: Performance Collection Task Editor - Entities Tab

The Entities tab includes the following controls:

Parameter	Description
Add	Opens the Equipment Selection window with the list of available devices, allowing you to select the device(s) to be added to the task.
Remove	Removes selected entities from the list.

The following information is displayed for each entity in the list:

Parameter	Description
Region	The location associated with the selected equipment in the database of the management system.
Name	The name of the device as configured in the device.
Type	The type of device.
BTS Number	The ID number of the device (Site ID) as configured in the device.
Software Version	The running software version of the device (NPU).
IP Address	The IP address of the device.
State	The operational state of the equipment: Up/Down/Unreachable/Unknown

9.1.3 Actions Tab

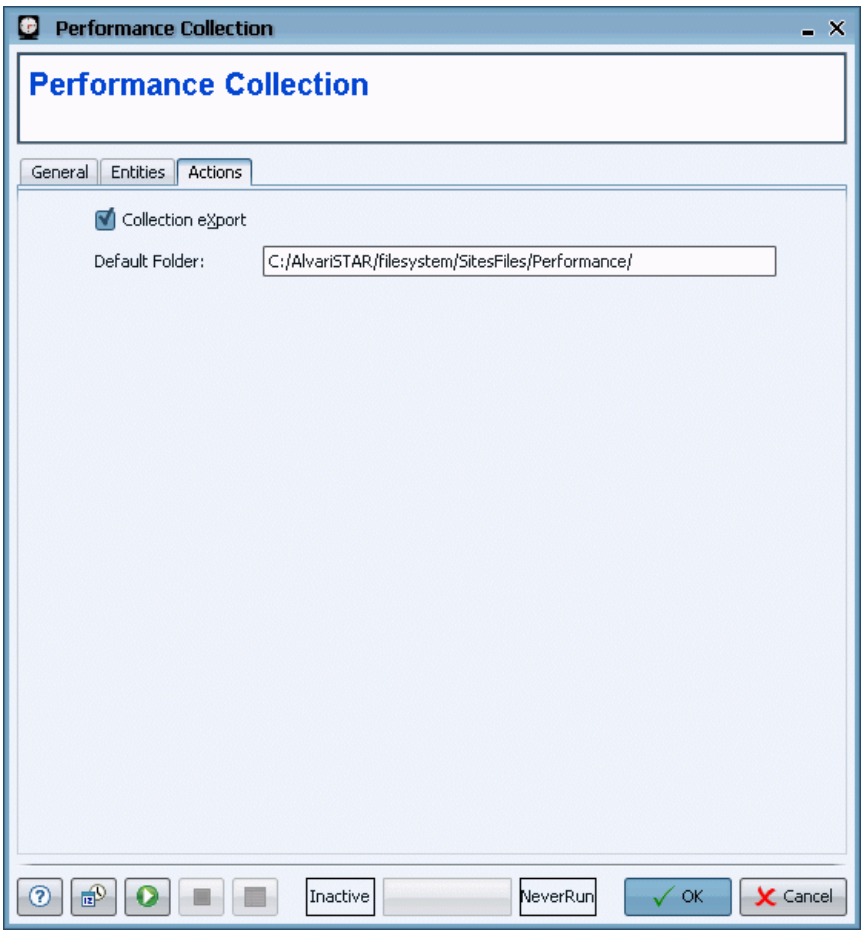


Figure 9-3: Performance Collection Task Editor - Actions Tab

The Actions tab enables setting how collected performance data is saved. By default, the performance data is saved in the management system's file system. In addition, the performance data xml files can be exported and saved in the client management system's file system. To automatically export the collected data to the location indicated in the read-only **Default Folder** text box, select the **Collection eXport** check-box.

9.2 Backup Configuration Task

LOCAL CRAFT NOTE

In the Local CRAFT Utility, the Configuration Backup Task is applicable only to the managed device.

The Backup Configuration task enables the retrieval of device's configuration backup file(s) from selected device(s). The backup files include copies of all the applicable configuration data and databases in the managed device. You can also retrieve Logging files from selected device(s). Logging files can later be exported to and used by an external application as part of a debugging procedure.

The device maintains up to the last three created configuration backup files. Configuration backup files are created periodically by the NPU, or upon a specific request to backup the current configuration. When requesting a backup file, you can either create and retrieve the current configuration, or retrieve one of the previous backup configuration files available in the NPU.

To open the Backup Task Editor:

To open the Backup Task Editor, do one of the following:

- In the Equipment Manager, select one or several entries, right-click on the selected entries and select the **Backup Configuration** option. The State of all selected devices must be Up. The Backup Task Editor for a new task is displayed with the selected devices automatically included in the Source Equipment table.
- In the Task Manager window, do one of the following:
  - » To open a new task, use the Task Wizard.
  - » To open an existing task, select a Configuration Backup task from the list of existing tasks, right-click and select the **Edit** option, or double-click on the selected task's entry. If the task is Active, the Runtime result screen is opened, displaying the status of the running task. If the task is Inactive, the Backup Task Editor for the selected task is displayed.

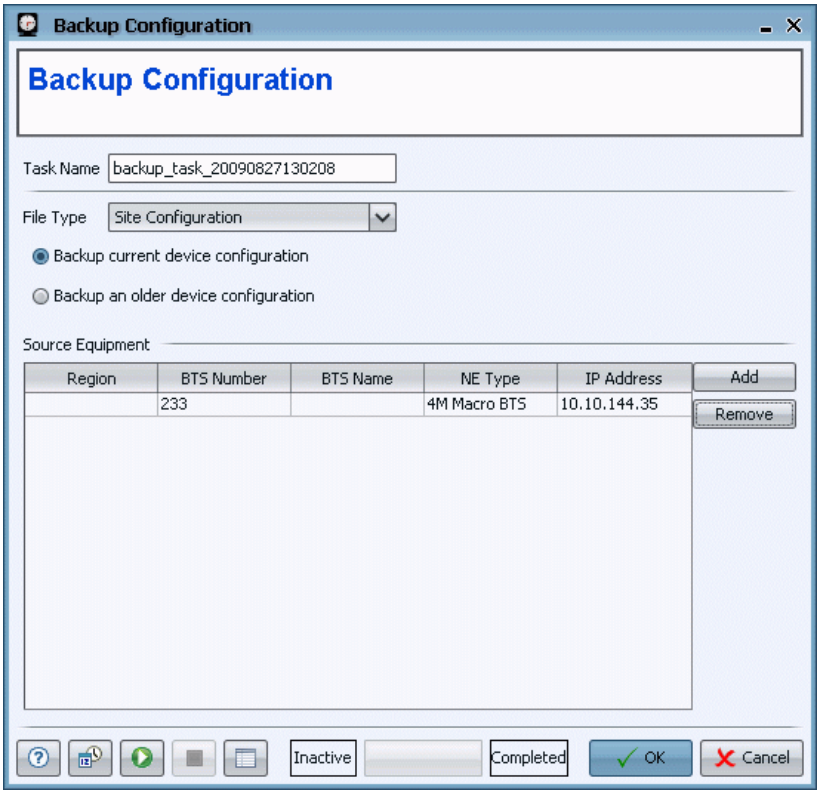


Figure 9-4: Backup Task Editor

The Backup Task editor comprises the following fields:

Parameter	Description
Task Name	The name of the task. A string of 1 to 128 characters. The default name includes the task's type and the date and time at which the task was created: backup_task_<yyyymmddhhmmss>. Note that when using the Task Wizard the default task name automatically replaces the name selected in the first (Create New Task) step.
File Type	The type of backup file: ■ Site Configuration: The entire site configuration. ■ Logging: The NPU SW modules log files.

Parameter	Description
Backup Current/Older Configuration Options	Available below the File Type selection field only if the selected File Type is Site Configuration. Select one of the following: ■ Backup Current Device Configuration: Select to retrieve the current configuration of the source device(s). The file will be created by the device upon getting the request from the management system. ■ Backup an older device configuration: Select to retrieve one of the previously created configuration files available in the database of the source device(s)

The Source Equipment table includes the following details for each device participating in the task:

Parameter	Description
Region	The location associated with the selected equipment in the database of the management system.
BTS Number	The device's number (Site ID) as configured in the device.
BTS Name	The name of the device as configured in the device.
NE Type	The device type.
IP Address	The IP address of the device.
File	Available only for **Site Configuration** backup task, if the selected option is **Backup an older device configuration**. The name of the file to be retrieved from the device.

Click on the **Add** button to open the equipment Selector, allowing you to add devices to the Source Equipment table: Select the device(s) to participate in the task, right-click and select the **Select** option (or double-click on a selected single device).

For Site Configuration backup task, if the selected option is **Backup an older device configuration**, a **File Name** drop-down menu for each entry allows you to select the file that will participate in the task. Each File Name includes its creation date and time.

To remove one or several devices from the Source Equipment table select the device(s) to be removed and click on the **Remove** button.

9.3 Restore Configuration Task

LOCAL CRAFT NOTE

In the Local CRAFT Utility, the Restore Configuration Task is applicable only to the managed device.

The Restore Configuration task enables loading a configuration file to a target device. The configuration file can be one of the following:

- A backup configuration file previously retrieved from the target device.
- A Duplicate Site configuration file previously prepared for the target device (based on the defined Site ID).

The task also enables loading a vendor configuration file to selected devices. A vendor configuration file includes vendor parameters that cannot be configured by the configuration tools available to the customer. If for any reason the vendor will decide that any of these parameters should be modified, the applicable customers will be notified and a special file that includes the necessary modifications shall be sent to them.

To open the Restore Task Editor:

In the Task Manager window, do one of the following:

- To open a new task use the Task Wizard.
- To open an existing task, select an existing Restore Configuration task from the list, right-click and select the **Edit** option, or double-click on the selected task. If the task is Active, the Runtime result screen is displayed, displaying the status of the running task. If the task is Inactive, the Restore Task Editor for the selected task is displayed.

  OR:

  In the File Manager for Equipment files select the required backup configuration file, right-click and select the **Restore** option, or double-click on the selected file. The Restore Task Editor for a new task with the details of the selected file (Type is Site Configuration) is displayed.

OR:

In the File Manager for Duplicate Site files select the required file, right-click and select the **Restore** option, or double-click on the selected file. The Restore Task Editor for a new task with the details of the selected file is displayed.

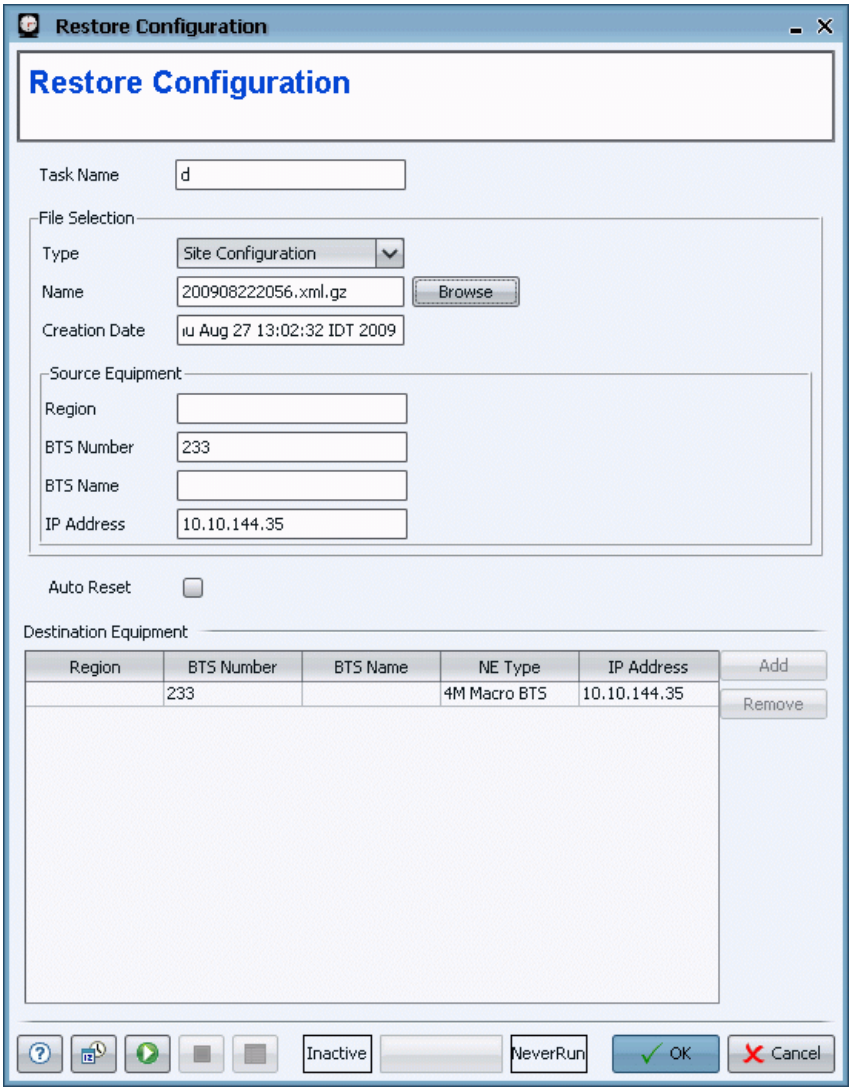


Figure 9-5: Restore Task Editor

The Restore Task editor comprises the following fields:

Parameter	Description
Task Name	The name of the task. A string of 1 to 128 characters. The default name includes the task's type and the date and time at which the task was created.
Type	The type of file to be used by the task: ■ Site Configuration: A backup Configuration file. ■ Duplicate Site: A Duplicate Site configuration file. ■ Vendor Configuration: A vendor configuration file.
Name	For a new Restore Task, click on the Browser button to open the applicable Selector window according to the selected Type above, and select the file to be used by the task.
Creation Date	The read-only creation date of the selected file.
Source Equipment	Applicable only for Site Configuration Restore task. The details of the source equipment of the selected backup configuration file.
Auto Reset	Click to automatically reset the target equipment after successful completion of the Restore task.

The Target Equipment table includes the following details for each device participating in the task:

Parameter	Description
Region	The location associated with the selected equipment in the database of the management system.
BTS Number	The number of the device (Site ID) as configured in the device.
BTS Name	The name of the device as configured in the device.
NE Type	The device type.
IP Address	The IP address of the device.

For Site Configuration and Duplicate Site Restore tasks the Target Equipment table includes only the read-only details of the target equipment. For a Site Configuration Restore task the target equipment is identical to the source equipment. The details are available only if the State of the target site is Up.

For a Vendor Configuration Restore task, click **Add** to open the equipment Selector, allowing you to add devices to the Target Equipment table. Click **Remove** to remove one or several selected devices from the table.

9.4 Software Upgrade Task

LOCAL CRAFT NOTE

In the Local CRAFT Utility, the Software Upgrade Task is applicable only to the managed device.

This section includes:

- "The Software Upgrade Task Editor
- "NPU Software Upgrade
- "AU Software Upgrade (applicable only for Macro Indoor/Outdoor BTS)

9.4.1 The Software Upgrade Task Editor

The Software Upgrade task enables loading a software file to selected devices and/or managing the software files in the devices.

The Software Upgrade task enables loading a software file to selected devices and/or managing the software files in the devices. When working under Windows, the files to be loaded should be available in the management system firmware folder *\filesystem\firmware\wm*,. The wm folder may need to be manually created.

When working under UNIX, refer to the instructions in:

/opt/<NMS name>/firmware/wm

The system will automatically identify the files and use the correct file for each device type.

You may define a different station as the TFTP server to be used. In this case the software file(s) to be used should be available in the root. Otherwise you should specify the full path and file name.

NOTE

The file name and format should not be changed.

To open the Software Upgrade Task Editor:

In the Task Manager window, do one of the following:

- To open a new task use the Task Wizard.
- To open an existing task, select a Software Upgrade task from the list, right-click and select the **Edit** option, or double click on the selected task entry. If the task is Active, the Runtime Results window is displayed, displaying the status of the running task. If the task is Inactive, the Software Upgrade Task Editor for the task is displayed.

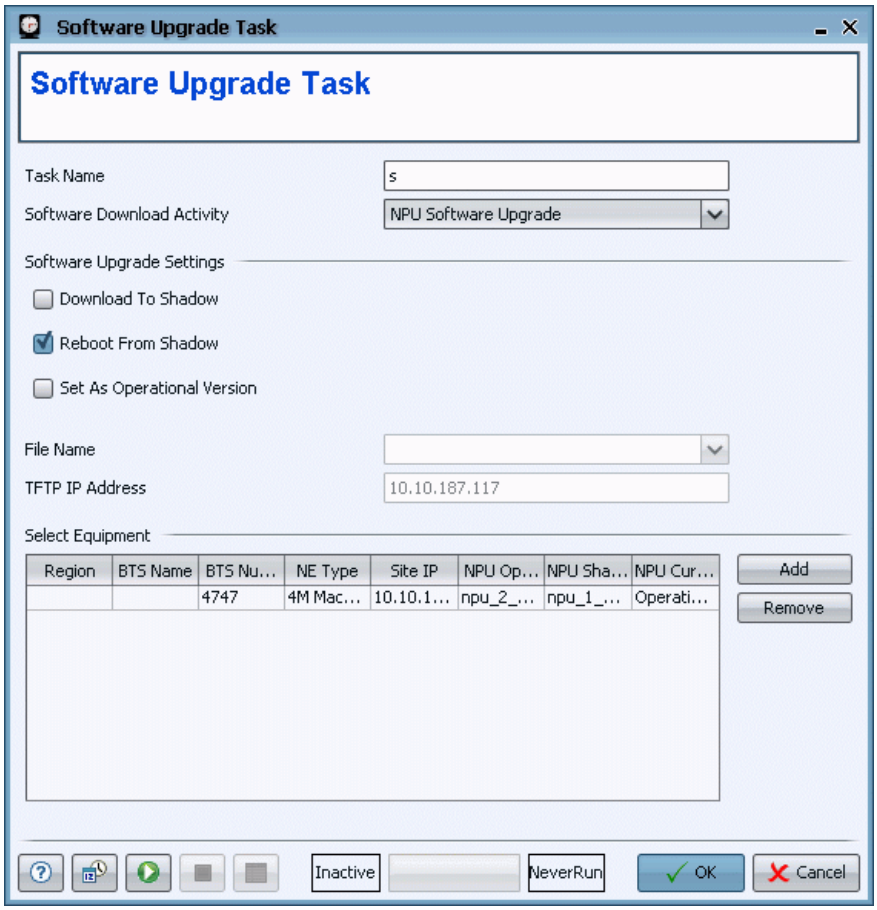


Figure 9-6: Software Upgrade Task Editor - NPU Software Upgrade

The Software Upgrade Task Editor includes the following general parameters:

Parameter	Description
Task Name	The name of the task. A string of 1 to 128 printable characters.
Software Download Activity	The type of upgrade: NPU Software Upgrade or AU Software Upgrade. AU Software Upgrade is applicable only for Macro Indoor/Outdoor BTS).

The content of the Software Upgrade Settings and Select Equipment sections depend on the selected Software Download Activity.

9.4.2 NPU Software Upgrade

The Software Upgrade Settings section comprises the following action options when NPU Software Upgrade is selected as the Software Download Activity:

Parameter	Description
Download to Shadow	Loads the upgrade file selected in the File Name selection field below to the Shadow memory of the applicable device(s).
Reboot from Shadow	Perform reset, and boot from the Shadow file.
Set as Operational Version	Applicable only for devices running from the Shadow file. Sets the running file as the new Operational file. The previous Operational (Main) file will now become the new Shadow file.
File Name	Available only if the Download to Shadow option is selected. If the default TFTP server is used (see below), he drop-down menu enables selecting one of the relevant files available in the default firmware folder. If another TFTP server is selected (see below), the drop-down menu enables selecting one of the relevant files available in the root directory. Otherwise you should manually specify the full path and file name.
TFTP IP Address	The IP address of the TFTP server on which the file to be downloaded is stored. This address is set by default to the management system's internal TFTP server IP address, but can be changed to any external TFTP server IP address.

If you select two or three actions, then each action will take place only after the successful completion of the previous action (selecting only the Download to Shadow and Set as Operational Version options is not a valid combination).

The selected action(s) will be performed on the devices included in the Select Equipment section.

Click on the **Add** button to open equipment selector for adding devices to the table. If Download to Shadow action was selected, the equipment selector will include only relevant managed devices according to the type of the selected

software file (Macro BTSs and Mini Centralized ASN-GW for an npu file, Micro Outdoor BTSs for an AU Micro file). The information displayed for each selected device includes details of the Shadow, Operational and Current versions.

Click on the **Remove** button to delete selected entries from the table.

NOTE

Download to Shadow action will be skipped if the target device is running from the Shadow version or if the specified file already exists in the device (as either Shadow or Operational).

Set as Operational Version action will be skipped if the target device is running from the Operational version.

9.4.3 AU Software Upgrade (applicable only for Macro Indoor/Outdoor BTS)

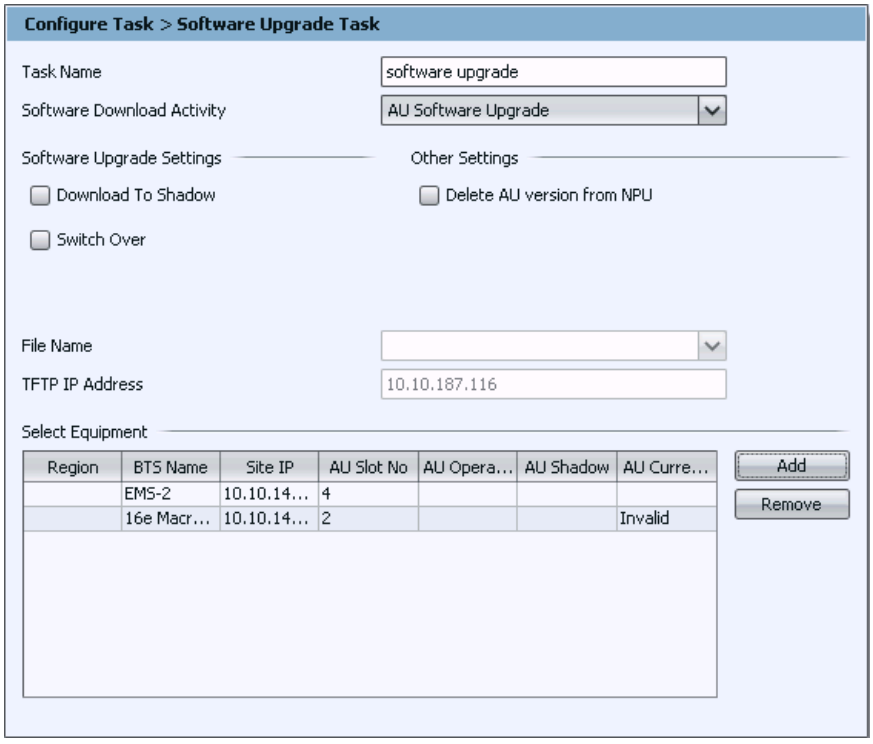


Figure 9-7: Software Upgrade Task Editor - AU Software Upgrade

NOTE

AUs should be upgraded only after successful completion of upgrading the relevant NPU(s).

The Software Upgrade Settings section comprises the following action options when AU Software Upgrade is selected:

Parameter	Description
Download to Shadow	Loads the upgrade file selected in the File Name selection field below to the Shadow memory of the applicable AU(s). The file is loaded first to the applicable NPU(s) and then to the AU(s). If the file already exists in the NPU, the first stage is skipped. If it exists in the AU, the process will be skipped. Note that the NPU can store a maximum of 3 AU SW files. If a new SW file should be loaded, the oldest file that is not mapped as the operational file of any AU will be deleted. If all 3 files are mapped to AUs (a situation that is not expected under regular conditions), you must first modify the mapping using CLI (see Upgrading the AU section in the System Manual) to enable deletion of at least one SW file.
Switch over	The AU(s) reset and boot from the shadow file. If successful, the files are switched automatically and the new SW version is set as the Operational (mapped) file.
Delete AU version from NPU	If selected, deletes the selected software file from the selected equipment. Note that you can remove only one file at a time. Only a file that is not used as the Operational (mapped) version can be removed.
File Name	Applicable only if the selected option(s) include either Download to Shadow or Delete AU Version from NPU. The name of the file to be loaded or deleted. If the selected action is Download to Shadow the drop-down menu enables selecting one of the relevant files available in the default firmware folder. If another TFTP server is selected (see below), the file(s) should be available in the root of this server. Otherwise you should manually specify the full path and file name. If the selected action is Delete AU Version from NPU, the drop-down list includes all files in the NPUs of the managed BTSs.
TFTP IP Address	The IP address of the TFTP server on which the file to be downloaded is stored. This address is set by default to the management system's internal TFTP server IP address, but can be changed to any external TFTP server IP address. See also in previous section ("NPU Software Upgrade) a note on proper process of modifying the TFTP Server IP Address.

You can select both the Download to Shadow and Switch Over options. In this case the Switch Over action will take place only after successful completion of the Load to Shadow action.

The Select Equipment table displays the devices that will participate in the task. The displayed functionality depend on the selected action(s):

If the selected action is **Delete AU Version from NPU**, the table displays all the NPUs that will participate in the task, and the AU software files stored in each of these NPUs. Click on the **Add** button to open the BTS Selector, allowing you to add NPU(s) to the task.

If Download to Shadow and/or **Switch Over** action is selected, the table displays all the AUs that will participate in the task and the current SW versions in each AU. Click on the **Add** button to open the equipment selector, allowing you to add AU(s) to the task. You can select between **AU Level Selection** (adding specific AUs) or **Site Level Selection** (adding all AUs in selected Sites).

Click on the **Remove** button to delete selected entries from the table.

9.5 4Motion File Data Aging Task

The File Data Aging Task enables limiting the time for maintaining equipment and configuration files in the database (see also "The File Manager" on page 321). This is a system task that cannot be deleted.

To open the File Data Aging Task Editor, select the task from the list of existing tasks, right-click and select the **Edit** option, or double-click on the entry.

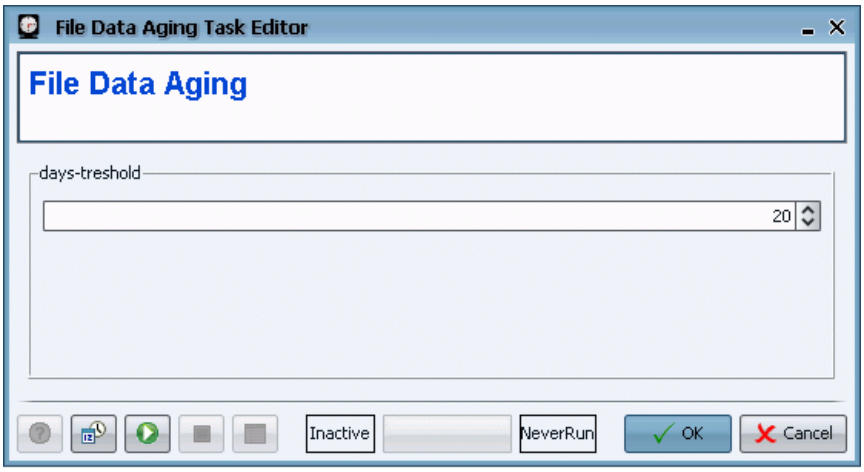


Figure 9-8: File Data Aging Task Editor

The days-threshold parameter sets the maximum time to maintain files in the database. If the elapsed time since a file was added to the database is higher than the value configures for the days-threshold parameter, the file will be deleted from the database.

9.6 CLI Task

LOCAL CRAFT NOTE

In the Local CRAFT Utility, the CLI Task is applicable only to the managed device.

The CLI task enables executing a CLI script file on target device(s).

To open the CLI Task Editor:

In the Task Manager window, do one of the following:

- To open a new task use the Task Wizard and select the CLI option.
- To open an existing task, select an existing CLI task from the list, right-click and select the **Edit** option, or double-click on the selected task. If the task is Active, the Runtime result screen is displayed, displaying the status of the running task. If the task is Inactive, the CLI Task Editor for the selected task is displayed.

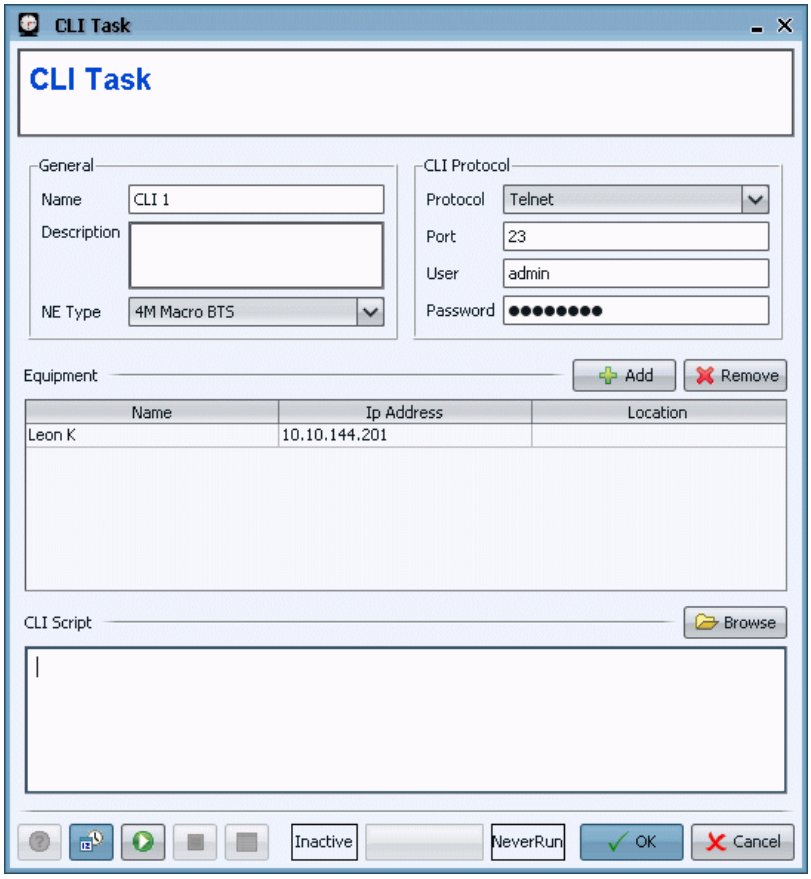


Figure 9-9: CLI Task Editor

The CLI Task editor comprises the following fields:

Parameter	Description
General	
Name	The name of the task. A string of 1 to 128 characters.
Description	An optional free text field providing a general description of the task. A string of 0 to 128 characters.
NE Type	Enables selection of the type of target Network Elements that will participate in the task.
CLI Protocol	
Protocol	Enables selection of the protocol to be used: Telnet or SSH. The default is Telnet.
Port	Displays the default port to be used: For Telnet the default is 23. For SSH the default is 22.

Parameter	Description
User	The user name for the CLI script. Must be a user that is defined in the target device(s) The default user is admin.
Password	The password for the CLI script. Must be the password associated with the defined user in the target device(s). The default password is admin123.

The Equipment table includes the following details for each device participating in the task:

Parameter	Description
Name	The name of the site as configured in the device.
IP Address	The IP address of the device.
Location	The Location associated with the device in the management system

Click **Add** to open the equipment Selector, allowing you to add devices to the Equipment table. Click **Remove** to remove one or several selected devices from the table.

In the **CLI Script** text box, enter the CLI script to be executed on the target device(s). You can use the Browse button to import a pre-prepared script (that may be edited after being imported to the task).

9.7 Mass Neighboring Task

LOCAL CRAFT NOTE

In the Local CRAFT Utility, the Mass Neighboring Task is applicable only to the BSs of the managed BTS.

The Mass Neighboring task enables executing **Send Update to All Neighbors** and **Get Update** tasks on multiple BSs to ensure that the required neighbor BS data in all target BSs is fully updated.

This task complements the one-time Neighboring tasks initiated from a single source BS (see "Neighbor List" on page 261).

To open the Mass Neighboring Task Editor:

In the Task Manager window, do one of the following:

- To open a new task use the Task Wizard. and select the Neighboring Task option
- To open an existing task, select an existing Mass Neighboring task from the list, right-click and select the **Edit** option, or double-click on the selected task. If the task is Active, the Runtime result screen is displayed, displaying the status of the running task. If the task is Inactive, the Mass Neighboring Task Editor for the selected task is displayed.

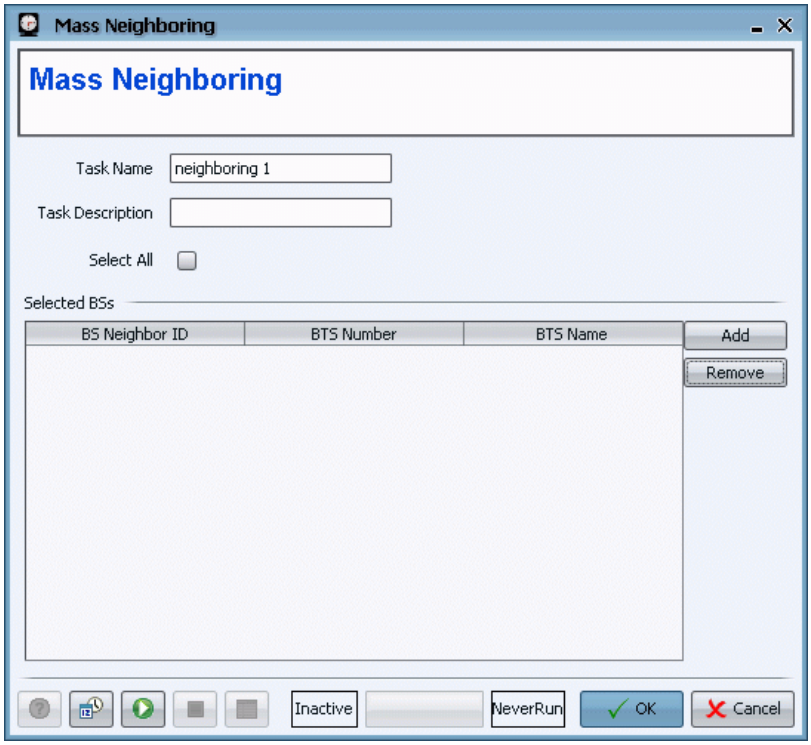


Figure 9-10: Mass Neighboring Task Editor

The Mass Monitoring Task editor comprises the following fields:

Parameter	Description
Task Name	The name of the task. A string of 1 to 128 characters.
Task Description	An optional free text field providing a general description of the task. A string of 0 to 128 characters.
Select All	Select to include all BSs in the Neighboring BSs list in the task. The neighboring BSs list includes all BSs that are defined as neighbors of other BSs or as having at least one neighbor.

The Selected BSs table includes the following details for each BS participating in the task:

Parameter	Description
BS Neighbor ID	The BS ID LSB of the neighbor BS.
BTS Number	The BTS Number (Site ID) of the neighbor BS
BTS Name	The BTS Name of the neighbor BS.

Click **Add** to open the BS Selector, allowing you to add BSs to the table. The list of neighboring BSs available in the BS Selector includes all BSs that are defined as neighbors of other BSs or as having at least one neighbor, and is updated through the **Add**, **Delete** and **Delete from Neighbors** Neighboring tasks initiated from the BSs (see "Neighbor List" on page 261).

Click **Remove** to remove one or several selected BSs from the table.

The task includes **Send Update to All Neighbors** and **Get Update** Neighboring Tasks to/from all BSs participating in the task. If the task includes all neighboring BSs through enabling the **Select All** option, then only the Send Update task to all relevant BSs is executed since this is sufficient for complete update.

9.8 Multiple Configuration (Template Based) Task

LOCAL CRAFT NOTE

In the Local CRAFT Utility, the Multiple Configuration Task is applicable only to the managed device.

The Multiple Configuration task enables modifying the configuration of selected devices using a pre-prepared template. For details on templates and how they are used to modify configuration of target objects refer to "The Template Manager" on page 17.

NOTE

In the current release the template-based Multiple Configuration task supports multiple configuration of BTS devices. It does not support multiple configuration of Mini-Centralized ASN-GW devices.

To open the Multiple Configuration Task Editor:

In the Task Manager window, do one of the following:

- To open a new task from the Task Manager use the Task Wizard and select the Multiple Configuration (Template Based) option.
- To open a new task from the Template Manager select the template you want to use, right-click and select the **Apply** option.
- To open an existing task, select an existing Multiple Configuration task from the list, right-click and select the **Edit** option, or double-click on the selected task. If the task is Active, the Runtime result screen is displayed, displaying the status of the running task. If the task is Inactive, the Multiple Configuration Task Editor for the selected task is displayed.

To open a new task from the Equipment Manager, select the target device(s), right-click and select the **Multiple Configuration** option.

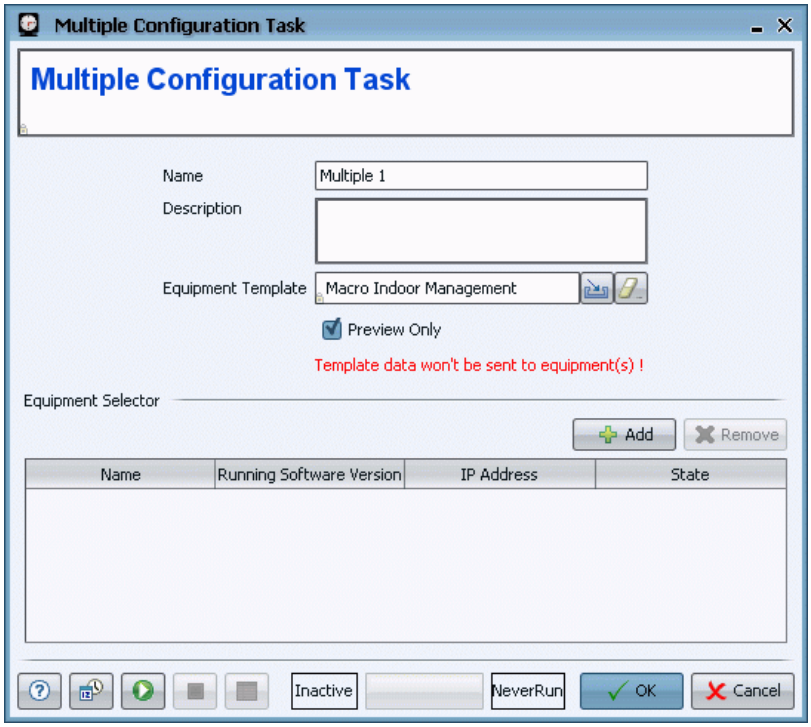


Figure 9-11: Multiple Configuration Task Editor

The Multiple Configuration Task editor comprises the following fields:

Parameter	Description
Name	The name of the task. A string of 1 to 128 characters.
Description	An optional free text field providing a general description of the task.
Equipment Template	Use the Browser button to open the Template Selector and select the template you want to use.
Preview Only	Select to define a preview task. Preview option allows getting the full report without performing any actual modification to the devices. All validation rules are verified. This enables the user to gain confidence on performing the multiple configuration task. Typically he will run the multiple configuration task without preview when he has no more errors in the Preview task report.

The Equipment Selector table includes the following details for each device participating in the task:

Parameter	Description
Name	The name of the device as configured in the device.

Parameter	Description
SW Version	The running SW version of the device.
IP Address	The IP address of the device.
State	The operational state of the device

Click **Add** to open the Equipment Selector, allowing you to add objects to the Equipment table:

If the MO Type of the selected template is ASN-GW or Management, the equipment selector includes all eligible BTSs. If the MO Type is BS, the selector enables selection of eligible BSs.

Click **Remove** to remove one or several selected objects from the table.

9.9 4Motion Mutual Neighboring Task

In a properly configured system, if BS1 is defined as a neighbor of BS2, then BS2 should be defined as a neighbor of BS1. The Mutual Neighboring Task enables checking consistency of neighboring BSs definition across the entire managed network. This is a system task that cannot be deleted.

To open the Mutual Neighboring Task Editor, select the task from the list of existing tasks, right-click and select the **Edit** option, or double-click on the entry.

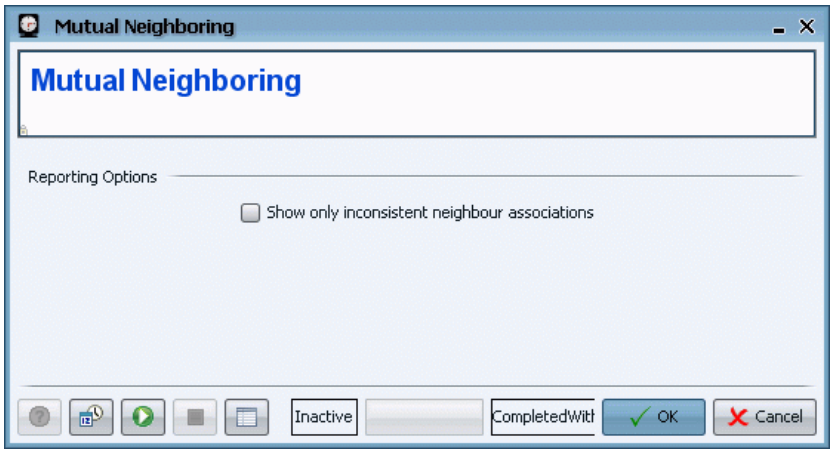


Figure 9-12: Mutual Neighboring Task Editor

The editor enables defining the report type for the next execution of the task: Check to include in the report only inconsistent neighbor associations. Do not check (the default) to get a full report.

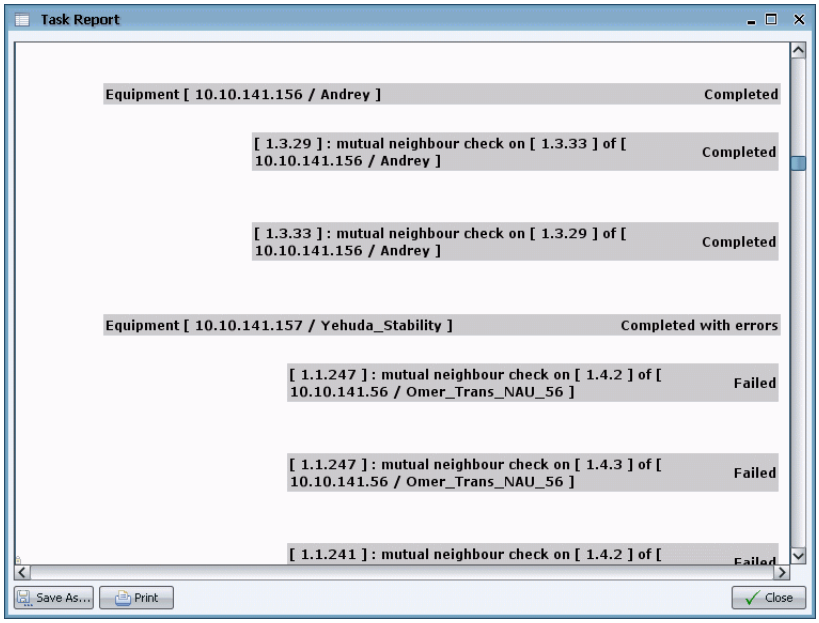

Task Report
Equipment [10.10.141.156 / Andrey] Completed
[1.3.29] : mutual neighbour check on [1.3.33] of [10.10.141.156 / Andrey] Completed
[1.3.33] : mutual neighbour check on [1.3.29] of [10.10.141.156 / Andrey] Completed
Equipment [10.10.141.157 / Yehuda_Stability] Completed with errors
[1.1.247] : mutual neighbour check on [1.4.2] of [10.10.141.56 / Omer_Trans_NAU_56] Failed
[1.1.247] : mutual neighbour check on [1.4.3] of [10.10.141.56 / Omer_Trans_NAU_56] Failed
[1.1.241] : mutual neighbour check on [1.4.2] of [
Save As...
Print
Close

Figure 9-13: Mutual Neighboring Report (full)

The report includes:

Result for the entire task: Completed or Completed with errors. The result will be Completed only if there are no inconsistencies in definitions of neighbor associations in the entire managed network.

Result for each device: Completed or Completed with errors. The result will be Completed only if there are no inconsistencies in definitions of neighbor associations in the device.

Result for each neighbor association, presented as:

[<BS ID 1>]: mutual neighbor check on [<BS ID 2>] of <BTS IP>/<BTS Name>.

This means that BS ID2 in the device identified by BTS IP and BTS Name is defined as a neighbor of BS ID 1. If BS ID 1 is defined in the data base as a neighbor of BS ID 2, the result for this line will be Completed. Otherwise, there is inconsistency and the result will be Failed.

The partial report (showing only inconsistent neighbor associations) will include only device for which the result is Completed with errors (if any), and the Failed results in these devices.

For proper operation of the network there should not be any inconsistencies in definitions of neighbor associations.

Chapter 10

The File Manager

In This Chapter:

- "The File Manager" on page 323
- "Equipment File Manager" on page 324
- "Duplicate Site File Manager" on page 327

10.1 The File Manager

The File Manager enables viewing details and managing different types of files stored in the database of the management system.

To open the File Manager

1. Select *Administration* > *File Manager* from the Navigation Pane or menu bar. The File Manager window opens.
2. In the View field, use the drop-down menu to select the type of file you want to manage. The contents of the window will change according to the selected type.

The following sections describe the functionality of the following file managers, according to the selected type:

- “Equipment File Manager” on page 324
- “Duplicate Site File Manager” on page 327

10.2 Equipment File Manager

The Equipment File Manager enables viewing details of different files that were retrieved from managed devices and are available in the database of the management system. It also enables initiating the Restore Configuration Task (see "Restore Configuration Task" on page 300), exporting files to the client file-system and importing files stored in the client file-system. Files are added to the database by either importing them (see details below) or by retrieving them from the managed devices using an applicable task (Performance Collection or Backup Configuration).

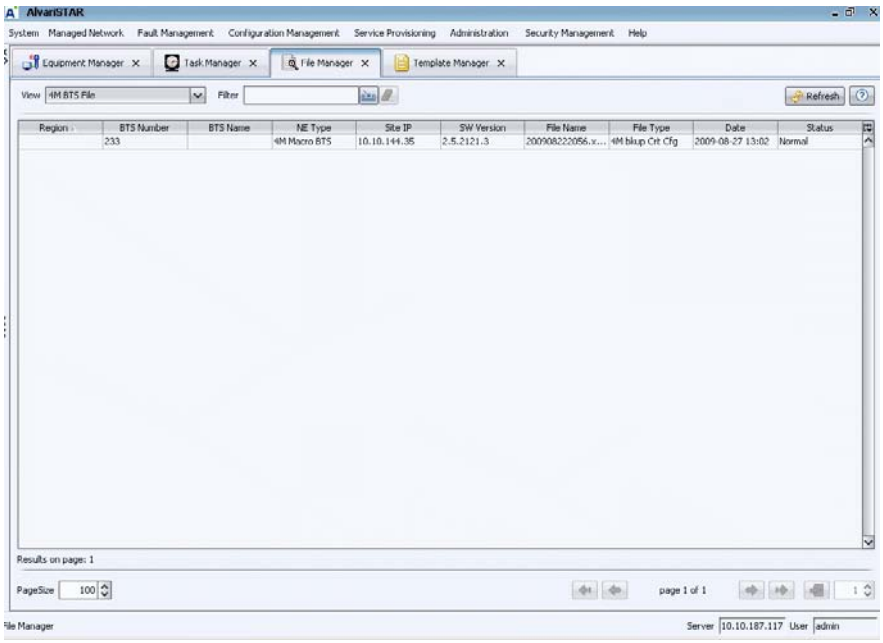


Figure 10-1: Equipment File Manager

You can use the Criteria Select Filters for viewing only files that meet one or several selection criteria.

The read-only details of displayed files are

Parameter	Description
Region	The location associated with the selected equipment in the database of the management system.
BTS Number	The BTS number (Site ID) as configured in the device.

Parameter	Description
BTS Name	The name of the BTS as configured in the device.
NE Type	The device type.
Site IP	The IP address of the device.
SW Version	The running SW version used by the device when the file was created.
File Name	The name of the file. The name includes the data and time at which the file was created by the source device, using the real time clock of the device. The format is: ■ bkupCrtCfg file: <date&time>.xml.gz ■ bkupOlderCfg file: <date&time>.xml.gz ■ bkupLogging: <date&time>.log.gz ■ performance: ptf_<date&time>.xml.gz Not applicable to the Local CRAFT Utility.
File Type	The type of file: ■ bkupCrtCfg: A configuration backup file, requested for current configuration. ■ bkupOlderCfg: A configuration backup file, requested for an older configuration. ■ bkupLogging: A logging file. ■ performance: A performance collection file. Not applicable to the Local CRAFT Utility.
Date	The date and time at which the file was added to the database of the management system, using the real time clock of the client.
Status	The status of the file: Normal, Orphan (a backup file for a device that was removed from the database), Imported (for an imported file).

Select one or several entries and right-click to view the following file management options:

Parameter	Description
Restore	Applicable only if one configuration file (current or older) is selected. Opens the Restore Task Editor for the selected configuration backup file, enabling to restore the configuration. See "Restore Configuration Task" on page 300. The Restore Task Editor can also be opened by double-clicking on the selected configuration file's entry.
Delete	Deletes the selected file(s) from the database.
Export	Exports the selected file(s) to the client file-system. Click to open the **Save** window, browse to the desired location on the client file-system, and click **Save** to export the file(s).
Import	Imports a configuration backup file from the client file-system. Click to open the **Import Config Backup File** window, browse to the location on the client file-system where the file is stored, select the file and click **Import**. NOTE: The Import option is available when right-clicking anywhere in the work area, without the need to select any existing entry.
Export To Server	Available only for configuration backup and performance files, when selecting files of the same type. Click to export the selected file(s) to the file system in the management system's server. Performance files are stored in /filesystem/SitesFiles/Performance/ Backup files are stored in /filesystem/SitesFiles/FullConfiguration/ A backup file name will be appended with the BTS Number and IP Address.

10.3 Duplicate Site File Manager

The Duplicate Site File Manager enables viewing details of configuration files that were prepared using the Duplicate Site Manager (see "The Duplicate Site Manager" on page 97) and are available in the database of the management system. It also enables initiating the Restore Configuration Task (see "Restore Configuration Task" on page 300), exporting files to the client file-system and importing files stored in the client file-system. Files are added to the database by either importing them (see details below) or when created using the Duplicate Site Manager.

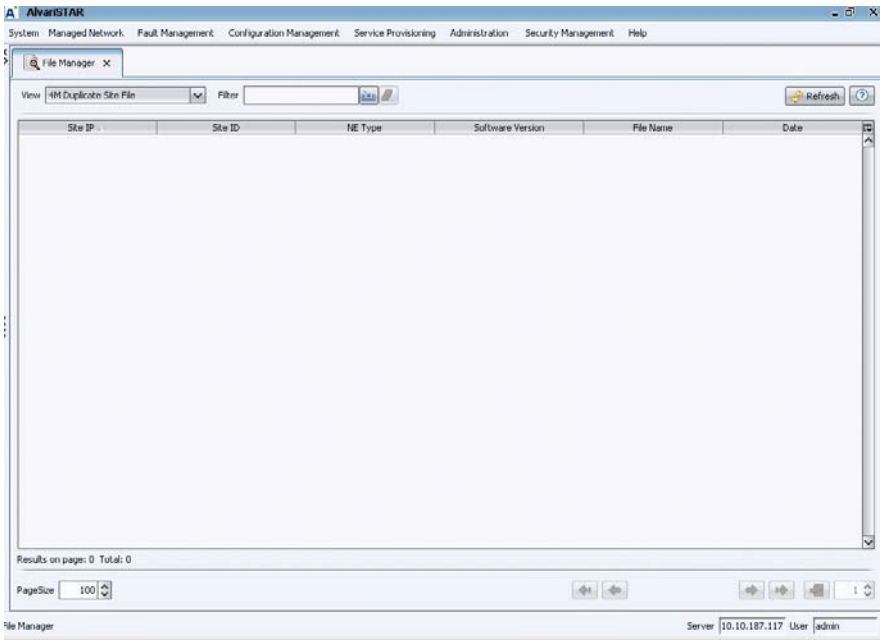


Figure 10-2: Duplicate Site File Manager

You can use the Criteria Select Filters for viewing only files that meet one or several selection criteria.

The read-only details of displayed files are:

Parameter	Description
Site IP	The IP address of the device as configured during creation of the duplicate site file.

Parameter	Description
BTS Number	The ID number of the device (Site ID) as configured during creation of the duplicate site file.
NE Type	The type of product used for preparing the duplicate site file.
Software Version	The Software Version specified during creation of the Duplicate Site file.
File Name	The name of the file that includes the data and time at which the file was created, using the real time clock of the source equipment.
Date	The date and time at which the file was added to the database of the management system, using the real time clock of the client.

Select one or several entries and right-click to view the following management options:

Parameter	Description
Restore	Opens the Restore Task Editor for a selected Duplicate Site file, enabling to restore the configuration. See "Restore Configuration Task" on page 300. The Restore Task Editor can also be opened by double-clicking on the selected file's entry.
Delete	Deletes the selected file(s) from the database.
Export	Exports the selected file(s) to the client file-system. Click to open the **Save** window, browse to the desired location on the client file-system, and click **Save** to export the file(s).
Import	Imports an Duplicate Site file from the client file-system. Click to open the **Import Duplicate Site File** window, browse to the location on the client file-system where the file is stored, select the file and click **Import**. NOTE: The Import option is available when right-clicking anywhere in the work area, without the need to select any existing entry.